RUCKUS FastIron Command Reference Guide, 10.0.00

Supporting FastIron Software Release 10.0.00

Part Number: 53-1005740-12
Publication Date: 15 February 2024

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Contact Information, Resources, and Conventions

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Contacting RUCKUS Customer Services and Support

The Customer Services and Support (CSS) organization is available to provide assistance to customers with active warranties on their RUCKUS products, and customers and partners with active support contracts.

For product support information and details on contacting the Support Team, go directly to the RUCKUS Support Portal using https://support.ruckuswireless.com, or go to https://www.ruckusnetworks.com and select **Support**.

What Support Do I Need?

Technical issues are usually described in terms of priority (or severity). To determine if you need to call and open a case or access the self-service resources, use the following criteria:

- Priority 1 (P1)—Critical. Network or service is down and business is impacted. No known workaround. Go to the **Open a Case** section.
- Priority 2 (P2)—High. Network or service is impacted, but not down. Business impact may be high. Workaround may be available. Go to the **Open a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Go to the **Self-Service Resources** section.
- Priority 4 (P4)—Low. Requests for information, product documentation, or product enhancements. Go to the **Self-Service Resources** section.

Open a Case

When your entire network is down (P1), or severely impacted (P2), call the appropriate telephone number listed below to get help:

- Continental United States: 1-855-782-5871
- Canada: 1-855-782-5871
- Europe, Middle East, Africa, Central and South America, and Asia Pacific, toll-free numbers are available at https://support.ruckuswireless.com/contact-us and Live Chat is also available.
- Worldwide toll number for our support organization. Phone charges will apply: +1-650-265-0903

We suggest that you keep a physical note of the appropriate support number in case you have an entire network outage.

Self-Service Resources

The RUCKUS Support Portal at https://support.ruckuswireless.com offers a number of tools to help you to research and resolve problems with your RUCKUS products, including:

- Technical Documentation—https://support.ruckuswireless.com/documents
- Community Forums—https://community.ruckuswireless.com
- Knowledge Base Articles—https://support.ruckuswireless.com/answers
- Software Downloads and Release Notes—https://support.ruckuswireless.com/#products_grid
- Security Bulletins—https://support.ruckuswireless.com/security

Using these resources will help you to resolve some issues, and will provide TAC with additional data from your troubleshooting analysis if you still require assistance through a support case or RMA. If you still require help, open and manage your case at https://support.ruckuswireless.com/case_management.

Document Feedback

RUCKUS is interested in improving its documentation and welcomes your comments and suggestions.

You can email your comments to RUCKUS at #Ruckus-Docs@commscope.com.

When contacting us, include the following information:

- Document title and release number
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- RUCKUS SmartZone Upgrade Guide, Release 5.0
- Part number: 800-71850-001 Rev A
- Page 7

RUCKUS Product Documentation Resources

Visit the RUCKUS website to locate related documentation for your product and additional RUCKUS resources.

Release Notes and other user documentation are available at https://support.ruckuswireless.com/documents. You can locate the documentation by product or perform a text search. Access to Release Notes requires an active support contract and a RUCKUS Support Portal user account. Other technical documentation content is available without logging in to the RUCKUS Support Portal.

White papers, data sheets, and other product documentation are available at https://www.ruckusnetworks.com.

Online Training Resources

To access a variety of online RUCKUS training modules, including free introductory courses to wireless networking essentials, site surveys, and products, visit the RUCKUS Training Portal at https://commscopeuniversity.myabsorb.com/. The registration is a two-step process described in this video. You create a CommScope account and then register for, and request access for, CommScope University.

Document Conventions

The following table lists the text conventions that are used throughout this guide.

TABLE 1 Text Conventions

Convention	Description	Example
`monospace`	Identifies command syntax examples	`device(config)# interface ethernet 1/1/6`
bold	User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names	On the **Start** menu, click **All Programs**.
italics	Publication titles	Refer to the *RUCKUS Small Cell Release Notes* for more information.

Notes, Cautions, and Safety Warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE
A NOTE provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION
An ATTENTION statement indicates some information that you must read before continuing with the current action or task.



CAUTION
A CAUTION statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER
A DANGER statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Command Syntax Conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
italic text	Identifies a variable.
[ ]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{**x**| **y**| **z**}	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x|**y**	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, *member*[*member*...].
\	Indicates a “soft” line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

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New in This Document

Information has been added or updated to reflect new FastIron features or enhancements to existing FastIron features.

For commands introduced since Release 08.0.01, a history table is included with each command to provide details about the modifications to that command. For commands introduced prior to Release 08.0.01, a history table is not provided, unless the command has been modified in recent releases.

NOTE
In addition to commands that are new or modified for this release, commands for existing FastIron features may have been added that were previously described only in FastIron configuration guides.

Re-Introduced Commands for FastIron 10.0.00a

The following command has been re-introduced for this release:

- **enable strict-password-enforcement**

New Commands for FastIron 10.0.00a

No new commands have been added (new for this release).

Modified Commands for FastIron 10.0.00a

No commands have been modified (updated for this release).

Deprecated Commands for FastIron 10.0.00a

The following command have been deprecated in this release.

TABLE 2 Deprecated Commands for FastIron 10.0.00a

Command	Replaced By
ip dhcp-server arp-ping-timeout	This function is no longer supported.

New Commands for FastIron 10.0.00

The following commands have been added (new for this release).

- **clear 802-1w statistics**
- **clear chassis unit-id**
- **clear mstp statistics**

- **clear span statistics**
- **inline power allocation dynamic**
- **ip icmp burst-max**
- **ip icmp icmp-fragments**
- **ip tcp burst-max**
- **ip tcp fin-urg-psh**
- **ip tcp over-mac-multicast**
- **ip tcp port-zero**
- **ip tcp syn-fin**
- **ip tcp syn-rst**
- **ip tcp tcp-all**
- **ip tcp zero-flags**
- **show ip multicast data-plane**
- **show ipv6 multicast data-plane**
- **show ipv6 pim counter**
- **show statistics dos-attack icmp**
- **show statistics dos-attack icmp fragments**
- **show statistics dos-attack tcp**

Modified Commands for FastIron 10.0.00

The following commands have been modified (updated for this release).

- **copy disk0 system-manifest**
- **copy tftp system-manifest**
- **forwarding-profile**
- **show 802-1w**
- **show ip multicast mcache**
- **show ip multicast vlan**
- **show ipv6 multicast mcache**
- **show ipv6 multicast vlan**
- **show ipv6 pim nsr**
- **show mstp**
- **show span**
- **system-max rmon-entries**

Deprecated Commands for FastIron 10.0.00

The following commands have been deprecated in this release.

TABLE 3 Deprecated Commands for FastIron 10.0.00

Command	Replaced By	Replacement Notes
area authentication (IPsec), **area virtual-link authentication ipsec (OSPFv3)**, **clear ipsec sa**, **description (IPsec)**, **dlb-internal-trunk-hash**, **esn-enable (IPsec)**, **ip multicast group upnp drop**, **ip multicast-nonstop-routing**, **ipsec profile**, **ipsec proposal**, **ipv6 ospf authentication ipsec**, **ipv6 ospf authentication ipsec disable**, **ipv6 ospf authentication ipsec spi**, **lifetime (IPsec)**, **logging enable ikev2**, **logging enable ipsec**, **proposal (IPsec)**, **replay-protection (IPsec)**, **qos monitor-queue-drop-counters**, **qos-internal-trunk-queue**, **show dlb-internal-trunk-hash**, **show ip multicast mac-cache**, **show ipv6 multicast mac-cache**, **show ipsec card-utilization**, **show ipsec profile**, **show ipsec proposal**, **show ipsec sa**, **tunnel mode ipsec**, **show qos-internal-trunk-queue**, **system-max l3-interface**, **tunnel protection ipsec profile**, **tunnel tos**, **tunnel vrf**	No replacement.	This function is no longer supported.
default-gateway, **default-ipv6-gateway**, **ip default-gateway**, **ipv6 default-gateway**, **management-vlan**,	No replacement.	Switch ("Layer 2") images are no longer provided for ICX devices. Only the router ("Layer 3") image is available. On upgrade to FastIron 10.0.00, the configuration of any ICX devices operating with the switch image are automatically translated to the equivalent router image configuration. These features were deprecated as a result.

TABLE 4 Other Enhancements in FastIron release 10.0.00

Feature	Description	Location
RUCKUS ICX 8200	**New**: Added support for RUCKUS ICX 8200 devices.	Throughout the guide
Discontinuation of support for a separate switch image	**Updated**: This release and future releases support a single image for ICX platforms that provides both switching and routing functionality. As a result, support for a separate switch (“Layer 2”) image is discontinued.	References have been removed throughout the guide.
Unsupported hardware	**Updated**: Support for RUCKUS ICX 7150, 7250, and 7450 devices is discontinued in FastIron 10.0.0.	References have been removed throughout the guide
Minor editorial updates	Minor editorial updates were made throughout the Command Reference.	All chapters.
Updates to address defects	Minor updates on commands throughout to address defects.	All chapters.

Supported Hardware

This guide supports the following RUCKUS products:

- RUCKUS ICX 8200 Switches
- RUCKUS ICX 7850 Switches
- RUCKUS ICX 7650 Switches
- RUCKUS ICX 7550 Switches

For information about what models and modules these devices support, refer to the hardware installation guide for the specific product family.

Using the FastIron Command Line Interface

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Accessing the CLI

Once an IP address is assigned to a RUCKUS device running Layer 2 software or to an interface on the RUCKUS device running Layer 3 software, you can access the Command Line Interface (CLI) either through a direct serial connection or through a local or remote Telnet session.

You can initiate a local Telnet or SNMP or SSH connection by attaching a cable to a port and specifying the assigned management station IP address.

Command Configuration Modes

The RUCKUS CLI uses an industry-standard hierarchical shell familiar to Ethernet and IP networking administrators. You can use one of three major command modes to enter commands and access sub-configuration modes on the device: user EXEC mode, privileged EXEC mode, and global configuration mode.

User EXEC Mode

User EXEC mode is the default mode for the device; it supports the lowest level of user permissions. In this mode, you can execute basic commands such as **ping** and **traceroute**, but only a subset of **clear**, **show**, and **debug** commands can be entered in this mode. The following example shows the user EXEC prompt after login. The **enable** command enters privileged EXEC mode.

```
device> enable
device#
```

Privileged EXEC Mode

Privileged EXEC mode supports all **clear**, **show**, and **debug** commands. In addition, you can enter some configuration commands that do not make changes to the system configuration. The following example shows the privileged EXEC prompt. At this prompt, you use the **configure terminal** command to enter global configuration mode.

```
device# configure terminal
device(config)#
```

Global Configuration Mode

Global configuration mode supports commands that can change the device configuration. For any changes to be persistent, you must save the system configuration before rebooting the device. The global configuration mode provides access to sub-configuration modes for individual interfaces, VLANs, routing protocols, and other configuration areas. The following example shows how you access the interface sub-configuration mode by using the **interface** command with a specified interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)#
```

Command Help

You can display commands and syntax information in any mode and from any point in the command hierarchy.

Enter a question mark (**?**) or a tab in any command mode to display the list of commands available in that mode.

```
device(config)# ?
  aaa                       Define authentication method list
  access-list               Define Access Control List (ACL)
  aggregated-vlan           Support for larger Ethernet frames up to 1536 bytes
  alias                     Configure alias or display configured alias
  all-client                Restrict all remote management to a host
  arp                       Enter a static IP ARP entry
  arp-internal-priority     Set packet priority
  arp-subnet-only           Only learn ARP in the subnet of this device
  authentication            Configure flexible authentication
  banner                    Define a login banner
  batch                     Define a group of commands
  boot                      Set system boot options
  (output truncated)
```

To display a list of commands that start with a specified character, type the character followed by a question mark (**?**) or a tab.

```
device(config)# e?
  enable                    Password, page-mode and other options
  end                       End Configuration level and go to Privileged level
  errdisable                Set Error Disable Attributions
  exit                      Exit current level
  extern-config-file        Extern configuration file
```

To display keywords and arguments associated with a command, enter the command followed by a question mark (**?**) or a tab.

```
device(config)# qos ?
  egress-buffer-profile   User defined QoS egress profile
  mechanism               Change mechanism
  name                    Change name
  profile                 Change bandwidth allocation
  scheduler-profile       User defined QoS profile
  tagged-priority         Change tagged frame priority to profile mapping
```

Command Completion

Command completion allows you to run a command by entering a partial string.

To complete the spelling of commands or keywords automatically, begin typing the command or keyword and then press Tab. For example, entering **conf t** in privileged EXEC mode auto-completes the keyword and runs the **configure terminal** command.

```
device# conf t
  terminal   Configure thru terminal
device# conf terminal
device(config)#
```

In releases prior to FastIron 08.0.80, if there are two or more matching commands or keywords, the commands or keywords will not be auto-filled when Tab is pressed. You must type all the characters in the commands or keywords to differentiate among the commands or keywords. In the following example, "dh" is matched with multiple keywords. Pressing Tab does not auto-complete the keyword, so you must manually type all the characters of the keyword.

```
device(config)# ip dh
  dhcp                          Set DHCP option
  dhcp-client                   DHCP client options
  dhcp-server                   DHCP Server
  dhcp-valid-check              Check DHCP offer packet for NULL client addr
```

Beginning with FastIron 08.0.80, if there is more than one command or keyword associated with the entered characters, pressing Tab auto-fills the commands or keywords up to the last common matching character among all the commands or keywords so that typing a single character allows you to auto-complete the keyword.

```
device(config)# ip dh <and press Tab>

device(config)# ip dhcp
 dhcp                          Set DHCP option
 dhcp-client                   DHCP client options
 dhcp-server                   DHCP Server
 dhcp-valid-check              Check DHCP offer packet for NULL client addr
```

In the previous example, because "dhcp" is the common word among the four options, pressing Tab auto-fills "dh" to "dhcp". The CLI displays all choices matching the characters. Type another character to differentiate among the keywords and utilize the Tab-based command completion, thus improving the usability.

```
device(config)# ip dhcp-c <and press Tab>

device(config)# ip dhcp-client
 auto-update                   Enable the DHCP client auto-update
 disable                       disable DHCP client globally on router
```

If you enter an invalid command or partial string that cannot be completed, an error message is displayed.

```
device(config)# shw
Unrecognized command
device(config)# shw
```

Scroll Control

By default, the CLI uses a page mode to paginate displays that are longer than 23 lines. The maximum number of lines per page is 23 (line 24 is reserved for printing). Displays that are longer than 23 lines are automatically segmented into pages with 23 lines per page.

If you use the question mark (**?**) to display a listing of available options in a given mode, the display stops at each 23-line increment and lists your choices for continuing the display.

```
aaa
all-client
appletalk
arp
boot
some lines omitted for brevity...

ipx
lock-address
logging
mac
--More--, next page: Space, next line:
Return key, quit: Control-c
```

Use one of the following scrolling options to display additional information:

- Press the Spacebar to display the next page (one screen at a time).
- Press the Return or Enter key to display the next line (one line at a time).
- Press Ctrl+C or Ctrl+Q to cancel the display.
- Use the **skip** command in privileged EXEC mode to disable page display mode. Use the **page** command to re-enable page display mode

The following example toggles between page display modes.

```
device# skip
Disable page display mode
```

```
device# page
Enable page display mode
```

Line-Editing Commands

The CLI supports the following line-editing commands. To enter a line-editing command, use the Ctrl+key combination for the command by pressing and holding the Ctrl key and then pressing the letter associated with the command.

TABLE 5 CLI Line-Editing Commands

Ctrl+Key Combination	Description
Ctrl+A	Moves to the first character on the command line.
Ctrl+B	Moves the cursor back one character.
Ctrl+C	Escapes and terminates command prompts and ongoing tasks (such as lengthy displays), and displays a fresh command prompt.
Ctrl+D	Deletes the character at the cursor.
Ctrl+E	Moves to the end of the current command line.
Ctrl+F	Moves the cursor forward one character.
Ctrl+K	Deletes all characters from the cursor to the end of the command line.
Ctrl+L; Ctrl+R	Repeats the current command line on a new line.
Ctrl+N	Enters the next command line in the history buffer.
Ctrl+P	Enters the previous command line in the history buffer.
Ctrl+U; Ctrl+X	Deletes all characters from the cursor to the beginning of the command line.
Ctrl+W	Deletes the last word you typed.
Ctrl+Z	Moves from any configuration level of the CLI to the privileged EXEC level; at the privileged EXEC level, moves to the user EXEC level.

Unsupported Characters

The CLI does not support the following characters. If you enter any of these characters, you receive an error message.

- # (number sign)
- { (left curly brace)
- } (right curly brace)
- ; (semi-colon)

Creating an Alias for a CLI Command

An alias serves as a shorthand version of a longer CLI command.

To set up an alias for a CLI command, use the **alias** command, followed by the text of the alias, an equal sign (=) and the actual CLI command in full. Ensure you have spaces between all the elements.

To remove an alias from the configuration, use the **no** form of the command, or the **unalias** command. The specified alias name to be removed must be the name of an alias already configured on the RUCKUS device.

NOTE
The alias name must be a single word, without spaces.

Alias Examples

The following example creates an alias called *shoro* for the **show ip route** command. After the alias is configured, entering *shoro* in the privileged EXEC mode or in the global configuration mode runs the **show ip route** command.

```
device(config)# alias shoro = show ip route
```

The following example creates an alias called *wrsbc* for the **copy running-config** command. Using an alias can also save you from entering the appropriate parameters accompanying the command.

```
device(config)# alias wrsbc = copy running-config tftp 10.10.10.10 test.cfg
```

To display the aliases currently configured on the RUCKUS device, enter the **alias** command with no parameters.

```
device# alias
          wrsbc      copy running-config tftp 10.10.10.10 test.cfg
          shoro       show ip route
```

Examples of no alias or unalias Commands

The following example removes the *wrsbc* alias from the configuration.

```
device(config)# no alias wrsbc
```

The following example is an alternate way to remove the *wrsbc* alias from the configuration.

```
device(config)# unalias wrsbc
```

Configuration Notes for Creating a Command Alias

The following configuration notes apply to creating a command alias:

- You cannot include additional parameters with the alias at the command prompt. For example, after you create the *shoro* alias, *shoro bgp* would not be a valid command.
- If configured on the RUCKUS device, authentication, authorization, and accounting (AAA) is performed on the actual command, not on the alias for the command.
- To save an alias definition to the startup-config file, use the **write memory** command.

Commands A and B

100-fx

Enables 100Base-FX on chassis-based and stackable devices.

Syntax

100-fx

no 100-fx

Command Default

100Base-FX is not enabled after installation.

Modes

Interface configuration mode

Usage Guidelines

After you physically install a 100Base-FX transceiver, you must use this command to enable 100Base-FX support on the device.

FastIron ICX devices support the following types of SFPs for 100BaseFX:

- *Multimode SFP*: Maximum distance is 2 kilometers
- *Long Reach (LR)*: Maximum distance is 40 kilometers
- *Intermediate Reach (IR)* : Maximum distance is 15 kilometers

For information about supported SFP and SFP+ transceivers on FastIron devices, refer to the *RUCKUS Optics Family Datasheet* on the RUCKUS website.

> **NOTE**
> You must disable 100Base-FX support before inserting a different type of module in the same port. Otherwise, the device will not recognize traffic traversing the port.

The **no** form of the command disables 100Base-FX support.

Examples

The following example enables support for 100Base-FX on a fiber port.

```
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# 100-fx
```

100-tx

Configures a 1000Base-TX small form-factor pluggable (SFP) transceiver to operate at a speed of 100 Mbps.

Syntax

100-tx

no 100-tx

Command Default

1000Base-TX SFP transceiver is not configured to operate at a speed of 100 Mbps.

Modes

Interface configuration mode

Usage Guidelines

This command requires autonegotiation to be enabled on the other end of the link.

Although combo ports (ports 1 to 4) on Hybrid Fiber (HF) models support the 1000Base-TX SFP, they cannot be configured to operate at 100 Mbps. The 100-Mbps operating speed is supported only with noncombo ports (ports 5 to 24).

1000Base-TX modules must be configured individually, one interface at a time. 1000Base-TX modules do not support digital optical monitoring. Hotswap is supported for this module when it is configured in 100M mode.

The **no** form of the command disables 1000Base-TX SFP support.

Examples

The following example configures a 1000Base-TX SFP transceiver to operate at 100 Mbps.

```
device(config)# interface ethernet 1/5/1
device(config-if-e1000-1/5/1)# 100-tx
```

aaa accounting commands

Configures the AAA accounting configuration parameters for EXEC commands.

Syntax

aaa accounting commands *privilege-level* **default start-stop radius** [**tacacs+**] [**none**]

no aaa accounting commands *privilege-level* **default start-stop radius** [**tacacs+**] [**none**]

aaa accounting commands *privilege-level* **default start-stop tacacs+** [**radius**] [**none**]

no aaa accounting commands *privilege-level* **default start-stop tacacs+** [**radius**] [**none**]

aaa accounting commands *privilege-level* **default start-stop none**

no aaa accounting commands *privilege-level* **default start-stop none**

Command Default

AAA accounting is disabled.

Parameters

privilege-level

Configures the device to perform AAA accounting for the commands available at the specified privilege level. Valid values are 0 (Super User level - all commands), 4 (Port Configuration level - port-config and read-only commands), and 5 (Read Only level - read-only commands).

default

Configures the default named list.

start-stop

Configures to send an Accounting Start packet to the AAA accounting server when you enter a command, and an Accounting Stop packet when the service provided by the command is completed.

radius

Configures RADIUS accounting.

tacacs+

Configures TACACS+ accounting.

none

Disables accounting. This is equivalent to using the **no** form of the command.

Modes

Global configuration mode

Usage Guidelines

You can configure AAA accounting for CLI commands by specifying a privilege level with commands that require accounting.

NOTE
If authorization is enabled, and the command requires authorization, then authorization is performed before accounting takes place. If authorization fails for the command, no accounting takes place.

You can configure RADIUS, TACACS+, and **none** as accounting methods. If the configured primary accounting fails due to an error, the device tries the backup accounting methods in the order they are configured.

The **no** form of the command disables accounting.

Examples

The following example configures the ICX device to perform RADIUS accounting for the commands available at the Super User privilege level (that is, all commands on the device).

```
device(config)# aaa accounting commands 0 default start-stop radius
```

The following example configures the ICX device to perform TACACS+ accounting for the commands available at the Read-only level (that is, read-only commands). The command also configures TACACS+ as the primary accounting followed by RADIUS.

```
device(config)# aaa accounting commands 5 default start-stop tacacs+ radius
```

aaa accounting dot1x

Enables 802.1X accounting.

Syntax

aaa accounting dot1x default start-stop radius [**none**]

no aaa accounting dot1x default start-stop radius [**none**]

aaa accounting dot1x default start-stop none

no aaa accounting dot1x default start-stop none

Command Default

AAA accounting is disabled.

Parameters

default

Configures the default named list.

start-stop

Configures to send an Accounting Start packet to the RADIUS accounting server when an 802.1X session is enabled, and an Accounting Stop packet is sent when the service provided by the command is completed.

radius

Configures RADIUS accounting.

none

Disables accounting. The client is automatically authenticated without the device using information supplied by the client.

Modes

Global configuration mode

Usage Guidelines

You can configure both RADIUS and **none** as accounting methods. If the configured primary accounting fails due to an error, the device tries the backup accounting methods in the order they are configured.

NOTE
If authorization is enabled, and the command requires authorization, then authorization is performed before accounting takes place. If authorization fails for the command, no accounting takes place.

The **no** form of the command disables accounting.

Examples

The following example enables 802.1x accounting.

```
device(config)# aaa accounting dot1x default start-stop radius
```

The following example enables 802.1x accounting and configures RADIUS as the primary accounting method. If the configured primary RADIUS accounting fails due to an error, the device tried the backup accounting method "none"; that is, accounting will be disabled.

```
device(config)# aaa accounting dot1x default start-stop radius none
```

aaa accounting exec

Configures the AAA accounting configuration parameters for SSH and Telnet access.

Syntax

aaa accounting exec default start-stop radius [**tacacs+**] [**none**]

no aaa accounting exec default start-stop radius [**tacacs+**] [**none**]

aaa accounting exec default start-stop tacacs+ [**radius**] [**none**]

no aaa accounting exec default start-stop tacacs+ [**radius**] [**none**]

aaa accounting exec default start-stop none

no aaa accounting exec default start-stop none

Command Default

AAA accounting is disabled.

Parameters

default

Configures the default named list.

start-stop

Configures to send an Accounting Start packet to the AAA accounting server when an authenticated user establishes a Telnet or SSH session on the ICX device, and an Accounting Stop packet when the user logs out.

radius

Configures RADIUS accounting.

tacacs+

Configures TACACS+ accounting.

none

Disables accounting.

Modes

Global configuration mode

Usage Guidelines

You can configure RADIUS, TACACS+, and **none** as accounting methods. If the configured primary accounting fails due to an error, the device tries the backup accounting methods in the order they are configured.

NOTE

If authorization is enabled, and the command requires authorization, then authorization is performed before accounting takes place. If authorization fails for the command, no accounting takes place.

The **no** form of the command disables accounting.

Examples

The following example configures the ICX device to perform RADIUS accounting for Telnet or SSH access.

```
device(config)# aaa accounting exec default start-stop radius
```

The following example configures the ICX device to perform TACACS+ accounting for Telnet or SSH access and to specify the order of accounting preference.

```
device(config)# aaa accounting exec default start-stop tacacs+ radius none
```

aaa accounting mac-auth

Enables or disables RADIUS accounting for MAC authentication sessions.

Syntax

aaa accounting mac-auth default start-stop radius [**none**]

no aaa accounting mac-auth default start-stop radius [**none**]

aaa accounting mac-auth default start-stop none

no aaa accounting mac-auth default start-stop none

Command Default

AAA accounting is disabled.

Parameters

default

Configures the default named list.

start-stop

Configures an accounting start packet to be sent to the RADIUS accounting server when a MAC authentication session is enabled and an accounting stop packet to be sent when the service provided by the command is completed.

radius

Configures RADIUS accounting.

none

Disables accounting. The client is automatically authenticated without the device using information supplied by the client.

Modes

Global configuration mode

Usage Guidelines

You can configure both RADIUS and **none** as accounting methods. If the configured primary accounting fails due to an error, the device tries the backup accounting methods in the order in which they are configured.

NOTE
If authorization is enabled, and the command requires authorization, then authorization is performed before accounting occurs. If authorization fails for the command, no accounting takes place.

The **no** form of the command disables accounting.

Examples

The following example enables accounting for MAC authentication sessions.

```
device(config)# aaa accounting mac-auth default start-stop radius
```

The following example enables accounting for MAC authentication and configures RADIUS as the primary accounting method. If the configured primary RADIUS accounting fails due to an error, the device tries the backup accounting method "**none**"; that is, accounting is disabled.

```
device(config)# aaa accounting mac-auth default start-stop radius none
```

History

Release version	Command history
08.0.50	This command was introduced.

aaa accounting system

Configures AAA accounting to record when system events occur on the device.

Syntax

aaa accounting system default start-stop radius [**tacacs+**] [**none**]

no aaa accounting system default start-stop radius [**tacacs+**] [**none**]

aaa accounting system default start-stop tacacs+ [**radius**] [**none**]

no aaa accounting system default start-stop tacacs+ [**radius**] [**none**]

aaa accounting system default start-stop none

no aaa accounting system default start-stop none

Command Default

AAA accounting is disabled.

Parameters

default
Configures the default named list.

start-stop
Configures to send an Accounting Start packet to be sent to the AAA accounting server when a system event occurs, and an Accounting Stop packet to be sent when the system event is completed.

radius
Configures RADIUS accounting.

tacacs+
Configures TACACS+ accounting.

none
Disables accounting.

Modes

Global configuration mode

Usage Guidelines

You can configure RADIUS, TACACS+, and None as accounting methods. If the configured primary accounting fails due to an error, the device tries the backup accounting methods in the order they are configured.

The **no** form of the command disables accounting.

Examples

The following example shows how to configure the ICX device to perform RADIUS accounting to record when a system event occurs.

```
device(config)# aaa accounting system default start-stop radius
```

The following example shows how to configure the device to perform TACACS+ accounting to record when a system event occurs and to specify RADIUS and None as the backup accounting methods.

```
device(config)# aaa accounting system default start-stop tacacs+ radius none
```

aaa authentication dot1x

Enables 802.1X and MAC authentication.

Syntax

aaa authentication dot1x default radius [**none**]

no aaa authentication dot1x default radius [**none**]

aaa authentication dot1x default none

no aaa authentication dot1x default none

Command Default

AAA authentication is disabled.

Parameters

default

Configures the default named list.

radius

Configures RADIUS authentication.

none

Disables authentication. The client is automatically authenticated by other means, without the device using information supplied by the client.

Modes

Global configuration mode

Usage Guidelines

To use 802.1X and MAC authentication, you must specify an authentication method to be used to authenticate clients. RADIUS authentication with 802.1X authentication is supported. To use RADIUS authentication with 802.1X authentication, you create an authentication method list for 802.1X and specify RADIUS as an authentication method, and then configure communication between the device and the RADIUS server.

If you specify both **RADIUS** and **none**, ensure **RADIUS** comes before **none** when the command is used.

You can configure the RADIUS and None as authentication methods. If the configured primary authentication fails due to an error, the device tries the backup authentication methods in the order they are configured.

Use the **aaa authentication dot1x default radius** command for both MAC authentication and 802.1X authentication.

The **no** form of the command disables authentication.

Examples

The following example enables 802.1x authentication.

```
device(config)# aaa authentication dot1x default radius
```

The following example enables MAC authentication.

```
device(config)# aaa authentication dot1x default radius
```

aaa authentication enable

Configures the AAA authentication method for securing access to the Privileged EXEC level and global configuration levels of the CLI.

Syntax

aaa authentication enable default *method-list* [*method-list* ...]

no aaa authentication enable default *method-list* [*method-list* ...]

Command Default

The AAA authentication method list is not configured.

By default, the device prompts for a username and password.

Parameters

default

Configures the default authentication method list.

method-list

Configures the following authentication methods.

local

Authenticate using a local username and password you configured on the device. Local usernames and passwords are configured using the **username** command.

radius

Authenticate using the database on a RADIUS server. You also must identify the server to the device using the **radius-server** command.

tacacs+

Authenticate using the database on a TACACS+ server. You also must identify the server to the device using the **tacacs-server** command.

Modes

Global configuration mode

Usage Guidelines

You can specify a primary authentication method and up to six backup authentication methods. If the configured primary authentication fails due to an error, the device tries the backup authentication methods in the order they appear in the list.

If **enable authentication** is configured on the device, when a user attempts to gain Super User access to the Privileged EXEC and global configuration levels of the CLI, by default the device prompts for a username and password.

From FastIron 09.0.00, the authentication method **local** can be added only if at least one configured local user is present on the ICX device. Likewise, the last available local user cannot be deleted if either **login** authentication or **web-server** authentication is using **local** as an authentication method.

The **no** form of the command removes the authentication method.

Examples

The following example shows how to configure TACACS+ as the primary authentication method for securing access to the Privileged EXEC and global configuration levels of the CLI. In this example, TACACS+ is configured to be the primary authentication method for securing access. If TACACS+ authentication fails due to an error with the server, local authentication is used instead.

```
device# configure terminal
device(config)# aaa authentication enable default tacacs+ local
```

The following example shows how to configure RADIUS as the primary authentication method and other backup authentication methods.

```
device(config)# aaa authentication enable default radius tacacs+ local
```

History

Release version	Command history
08.0.90	The command was modified as described in the usage guidelines.
09.0.00	The command was modified to remove the **implicit-user** keyword as well as the following *method-list* keywords: **line**, **enable**, **tacacs**, and **none**.

aaa authentication login

Configures the AAA authentication method for securing access to Telnet or SSH access to the CLI.

Syntax

aaa authentication login default *method-list* [*method-list* ...]

no aaa authentication login default *method-list* [*method-list* ...]

Command Default

The AAA authentication method list is not configured.

By default, a user enters the User EXEC mode after a successful login through Telnet or SSH.

Parameters

default

Configures the default authentication method list.

method-list

Configures the following authentication methods.

local

Authenticate using a local username and password you configured on the device. Local usernames and passwords are configured using the **username** command.

radius

Authenticate using the database on a RADIUS server. You also must identify the server to the device using the **radius-server** command.

tacacs+

Authenticate using the database on a TACACS+ server. You also must identify the server to the device using the **tacacs-server** command.

Modes

Global configuration mode

Usage Guidelines

You can specify a primary authentication method and up to six backup authentication methods. If the configured primary authentication fails due to an error, the device tries the backup authentication methods in the order they appear in the list.

From FastIron 09.0.10a, the authentication method **local** can be added only if at least one configured local user is present on the ICX device. Likewise, the last available local user cannot be deleted if either **login** authentication or **web-server** authentication is using **local** as an authentication method.

By default, a user enters User EXEC mode after a successful login through Telnet or SSH.

The **no** form of the command removes the authentication method.

Examples

The following example shows how to configure RADIUS as the primary authentication method for securing Telnet access to the CLI. If RADIUS authentication fails due to an error with the server, local authentication is used instead.

```
device# configure terminal
device(config)# aaa authentication login default radius local
```

The following example shows how to configure RADIUS as the primary authentication method and other backup authentication methods.

```
device(config)# aaa authentication login default radius tacacs+ local
```

History

Release version	Command history
08.0.90	The command was modified as described in the usage guidelines.
09.0.00	The command was modified to remove these options: **enable**, **none**, **line**, **tacacs**, and **login privilege-mode**.

aaa authentication snmp-server

Configures the AAA authentication method for SNMP server access.

Syntax

aaa authentication snmp-server default *method-list* [*method-list* ...]

no aaa authentication snmp-server default *method-list* [*method-list* ...]

Command Default

The AAA authentication method list is not configured.

Parameters

default

Configures the default authentication method list.

method-list

Configures the following authentication methods.

local

Authenticate using a local username and password you configured on the device. Local usernames and passwords are configured using the **username** command.

radius

Authenticate using the database on a RADIUS server. You also must identify the server to the device using the **radius-server** command.

tacacs+

Authenticate using the database on a TACACS+ server. You also must identify the server to the device using the **tacacs-server** command.

Modes

Global configuration mode

Usage Guidelines

You can specify a primary authentication method and up to six backup authentication methods. If the configured primary authentication fails due to an error, the device tries the backup authentication methods in the order they appear in the list.

From FastIron 09.0.00, the authentication method **local** can be added only if at least one configured local user is present on the ICX device. Likewise, the last available local user cannot be deleted if either **login** authentication or **web-server** authentication is using **local** as an authentication method.

When this command is enabled, community string validation is not performed for incoming SNMP v1and v2c packets. This command takes effect as long as the first varbind for SNMP packets is set to one of the following:

- snAgGblPassword=" username password " (for AAA method local)

- snAgGblPassword=" password " (for AAA method line, enable)

  NOTE
  Certain SNMP objects need additional validation. These objects include but are not limited to: snAgReload, snAgWriteNVRAM, snAgConfigFromNVRAM, snAgImgLoad, snAgCfgLoad, and snAgGblTelnetPassword.

If AAA is set up to check both the username and password, the string contains the username, followed by a space and then the password. If AAA is set up to authenticate with the current Enable or Line password, the string contains the password only. The configuration can be overridden by the **no snmp-server pw-check** command, which disables password checking for SNMP SET requests.

The **no** form of the command removes the authentication method.

Examples

The following example shows how to configure incoming SNMP SET operations to be authenticated using the locally configured usernames and passwords.

```
device# configure terminal
device(config)# aaa authentication snmp-server default local
```

History

Release version	Command history
08.0.90	The command was modified as described in the usage guidelines.
09.0.00	The command was modified to remove these options: **enable**, **none**, **line**, **tacacs**.

aaa authentication web-server

Configures the AAA authentication method to access the device through the Web Management Interface.

Syntax

aaa authentication web-server default *method-list* [*method-list* ...]

no aaa authentication web-server default *method-list* [*method-list* ...]

Command Default

The AAA authentication is not configured.

Parameters

default

Configures the default authentication method list.

method-list

Configures the following authentication methods.

local

Authenticate using a local username and password you configured on the device. Local usernames and passwords are configured using the **username** command.

radius

Authenticate using the database on a RADIUS server. You also must identify the server to the device using the **radius-server** command.

tacacs+

Authenticate using the database on a TACACS+ server. You also must identify the server to the device using the **tacacs-server** command.

Modes

Global configuration mode

Usage Guidelines

You can specify a primary authentication method and up to six backup authentication methods. If the configured primary authentication fails due to an error, the device tries the backup authentication methods in the order they appear in the list.

The **no** form of the command removes the authentication method.

From FastIron 09.0.00, the authentication method **local** can be added only if at least one configured local user is present on the ICX device. Likewise, the last available local user cannot be deleted if either **login** authentication or **web-server** authentication is using **local** as an authentication method.

Examples

The following example shows how to configure the device to use the local user accounts to authenticate access to the device through the Web Management Interface. If the device does not have a user account that matches the username and password entered by the user, the user is not granted access.

```
device# configure terminal
device(config)# aaa authentication web-server default local
```

History

Release version	Command history
08.0.90	The command was modified as described in the usage guidelines.
09.0.00	The command was modified to remove **enable**, **line**, **tacacs**, and **none** from available web-server authentication methods.

aaa authorization coa enable

Enables RADIUS Change of Authorization (CoA).

Syntax

aaa authorization coa enable

no aaa authorization coa enable

Command Default

RADIUS CoA is not enabled.

Modes

Global configuration mode

Usage Guidelines

Use this command to enable RADIUS CoA authorization. The no form of the command disables the CoA functionality. A change of authorization request packet can be sent by the Dynamic Authorization Client (DAC) to change the session authorizations on the Network Access Server (NAS). This is used to change the filters, such as Layer 3 ACLs.

Before RFC 5176 when a user or device was authenticated on the RADIUS server, the session could only be ended if the user or device logs out. RFC 5176 addresses this issue by adding two more packet types to the current RADIUS standard: Disconnect Message and Change of Authorization. The Dynamic Authorization Client (DAC) server makes the requests to either delete the previously established sessions or replace the previous configuration or policies. Currently, these new extensions can be used to dynamically terminate or authorize sessions that are authenticated through multi-device-port-authentication or dot1x authentication.

Examples

The following example enables RADIUS CoA.

```
device# configure terminal
device(config)# aaa authorization coa enable
```

History

Release version	Command history
08.0.20	This command was introduced.

aaa authorization coa ignore

Discards the specified RADIUS Change of Authorization (CoA) messages.

Syntax

aaa authorization coa ignore { **disable-port** | **dm-request** | **flip-port** | **modify-acl** | **reauth-host** }

no aaa authorization coa ignore { **disable-port** | **dm-request** | **flip-port** | **modify-acl** | **reauth-host** }

Command Default

The default state is maintained, and the packets are not discarded. All options are enabled for CoA processing.

Parameters

disable-port
Disables the port.

dm-request
Disconnects the message request.

flip-port
Toggles the port.

modify-acl
Modifies the access control list.

reauth-host
Reauthenticates the host.

Modes

Global configuration mode

Usage Guidelines

Use this command to discard the specified RADIUS messages. A CoA request packet can be sent by the Dynamic Authorization Client (DAC) to change the session authorizations on the Network Access Server (NAS). This is used to change the filters, such as Layer 3 ACLs.

Before RFC 5176, when a user or device was authenticated on the RADIUS server, the session could be ended only if the user or device logs out. RFC 5176 addresses this issue by adding two more packet types to the current RADIUS standard: Disconnect Message and Change of Authorization. The Dynamic Authorization Client (DAC) server makes the requests to either delete the previously established sessions or replace the previous configuration or policies. Currently, these new extensions can be used to dynamically terminate or authorize sessions that are authenticated through MAC authentication or 802.1X authentication.

The **no** form of the command honors the dm-request message.

Examples

The following example ignores the disconnect message request.

```
device(config)# aaa authorization coa ignore dm-request
```

The following example ignores the host reauthentication message request.

```
device(config)# aaa authorization coa ignore reauth-host
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.50	This command was updated with **disable-port**, **flip-port**, and **reauth-host** options.

aaa authorization commands

Configures the AAA authorization configuration parameters for EXEC commands.

Syntax

aaa authorization commands *privilege-level* **default radius** [**tacacs+**] [**none**]

no aaa authorization commands *privilege-level* **default radius** [**tacacs+**] [**none**]

aaa authorization commands *privilege-level* **default tacacs+** [**radius**] [**none**]

no aaa authorization commands *privilege-level* **default tacacs+** [**radius**] [**none**]

aaa authorization commands *privilege-level* **default none**

no aaa authorization commands *privilege-level* **default none**

Command Default

AAA authorization is not enabled.

Parameters

privilege-level

Configures the device to perform AAA authorization for the commands available at the specified privilege level. Valid values are 0 (Super User level - all commands), 4 (Port Configuration level - port-config and read-only commands), and 5 (Read Only level - read-only commands).

default

Configures the default named list.

radius

Configures RADIUS authorization.

tacacs+

Configures TACACS+ authorization.

none

Disables authorization.

Modes

Global configuration mode

Usage Guidelines

You can configure RADIUS, TACACS+, and None as authorization methods. If the configured primary authorization fails due to an error, the device tries the backup authorization methods in the order they are configured.

When TACACS+ command authorization is enabled, the ICX device consults a TACACS+ server to get authorization for commands entered by the user.

When RADIUS command authorization is enabled, the ICX device consults the list of commands supplied by the RADIUS server during authentication to determine whether a user can issue a command that was entered.

> **NOTE**
> TACACS+ and RADIUS command authorization can be performed only for commands entered from Telnet or SSH sessions, or from the console. No authorization is performed for commands entered at the Web Management Interface.

TACACS+ command authorization is not performed for the following commands:

- At all levels: **exit**, **logout**, **end**, and **quit**.
- At the Privileged EXEC level: **enable** or **enable***text*, where *text* is the password configured for the Super User privilege level.

Because RADIUS command authorization relies on the command list supplied by the RADIUS server during authentication, you cannot perform RADIUS authorization without RADIUS authentication.

The **no** form of the command disables authorization.

Examples

The following example shows how to configure RADIUS command authorization for the commands available at the Super User privilege level (that is, all commands on the device).

```
device(config)# aaa authorization commands 0 default radius
```

The following example shows how to configure TACACS+ command authorization for the commands available at the Super User privilege level (that is, all commands on the device).

```
device(config)# aaa authorization commands 0 default tacacs+
```

aaa authorization exec

Determines the user privilege level when users are authenticated.

Syntax

aaa authorization exec default radius [**tacacs+**] [**none**]

no aaa authorization exec default radius [**tacacs+**] [**none**]

aaa authorization exec default tacacs+ [**radius**] [**none**]

no aaa authorization exec default tacacs+ [**radius**] [**none**]

aaa authorization exec default none

no aaa authorization exec default none

Command Default

AAA authorization is not configured.

Parameters

default
Configures the default named list.

radius
Configures RADIUS authorization.

tacacs+
Configures TACACS+ authorization.

none
Disables accounting.

Modes

Global configuration mode

Usage Guidelines

You can configure RADIUS, TACACS+, and None as authorization methods. If the configured primary authorization fails due to an error, the device tries the backup authorization methods in the order they are configured.

When TACACS+ EXEC authorization is performed, the ICX device consults a TACACS+ server to determine the privilege level of the authenticated user. If the **aaa authorization exec default tacacs+** command exists in the configuration, following successful authentication, the device assigns the user the privilege level specified by the foundry-privilege-level received from the TACACS+ server. If the **aaa authorization exec default tacacs+** command does not exist in the configuration, then the value in the foundry-privilege-level attribute is ignored, and the user is granted Super User access. Also note that in order for the **aaa authorization exec default tacacs+** command to work, either the **aaa authentication enable default tacacs+** command, or the **aaa authentication login privilege-mode** command must also exist in the configuration.

When RADIUS EXEC authorization is performed, the ICX device consults a RADIUS server to determine the privilege level of the authenticated user. If the **aaa authorization exec default radius** command exists in the configuration, following successful authentication, the device assigns the user the privilege level specified by the foundry-privilege-level attribute received from the RADIUS server. If the **aaa authorization exec default radius** command does not exist in the configuration, then the value in the foundry-privilege-level attribute is ignored, and the user is granted Super User access. Also note that in order for the **aaa authorization exec default radius** command to work, either the **aaa authentication enable default radius** command, or the **aaa authentication login privilege-mode** command must also exist in the configuration.

The **no** form of the command disables authorization.

Examples

The following example shows how to configure TACACS+ EXEC authorization.

```
device(config)# aaa authorization exec default tacacs+
```

The following example shows how to configure RADIUS EXEC authorization.

```
device(config)# aaa authorization exec default radius
```

accept-lifetime

Configures the time period during which the key on a keychain becomes active and is received as valid.

Syntax

accept-lifetime [**local** | **start** { *start-date start-time* **end** { *duration* | **infinite** | *end-date end-time* } }]

no accept-lifetime

Command Default

The lifetime of accept keys is not configured by default.

Parameters

local
Specifies that the time zone used will be the time zone configured in the system.

start
Configures the point of time from which the key is received as valid.

start-date
Configures the start date in the *dd-mm-yy* format.

start-time
Configures the start time in the *hh:mm:ss* format.

end
Configures the point of time at which the accept key expires.

duration
Configures the duration in seconds before the accept key expires. The value ranges from 1 through 2147483646 seconds.

infinite
Configures the accept key to never expire.

end-date
Configures the end date in the *dd-mm-yy* format.

end-time
Configures the end time in the *hh:mm:ss* format.

Modes

Key ID configuration mode

Usage Guidelines

All participating routers must have Network Time Protocol (NTP) enabled before setting the lifetime on the keys.

If the tolerance value is configured, the start time of the accept key to become active is advanced (start time minus tolerance) and the end time is moved further ahead (end time plus tolerance) before the key expires, unless the end-time is set to be infinite.

A key is considered valid even when it is in the tolerance period.

A key can be selectively active for the send lifetime and not the accept lifetime.

The key must be configured with a minimum time of ten seconds.

The **no** form of the command negates the entire accept lifetime and not merely individual options of the duration.

Examples

The following example configures the time period during which the key on a keychain becomes active and is received as a valid key.

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)# key-id 10
device(config-keychain-xprotocol-key-10)# accept-lifetime start 10-10-17 10:10:10 end 10000
```

History

Release version	Command history
08.0.70	This command was introduced.

accept-mode

Enables a backup Virtual Router Redundancy Protocol (VRRP) device to respond to ping, traceroute, and Telnet packets if the backup device becomes the master VRRP device.

Syntax

accept-mode

no accept-mode

Command Default

A VRRP nonowner master router does not respond to any packet that is destined for the virtual IPv4 or IPv6 address.

Modes

VRID interface configuration mode

Usage Guidelines

A VRRP nonowner master router does not respond to any packet that is destined for the virtual IPv4 or IPv6 address. This prevents troubleshooting network connections to this router using ping, traceroute, or Telnet. To resolve this, you can use this command to enable the router to respond to ping, traceroute, and Telnet packets destined for the virtual IPv4 or IPv6 address of a VRRP cluster. The router drops all other packets destined for the virtual IPv4 or IPv6 address of the VRRP session.

NOTE
The **accept-mode** command enables the device to respond to ping, traceroute, and Telnet packets, but the device does not respond to SSH packets. When the device acting as the master router is not the IP address owner (the router with the interface whose actual IP address is used as the virtual router's IP address), the master router accepts only the ARP packets sent to the virtual IP address. When accept mode is configured, the master router responds to ping, TELNET, and traceroute packets sent to the virtual IP address even when the master router is not the IP address owner.

The **no** form of the command causes the nonowner master router to not respond to any packet that is destined for the virtual IPv4 or IPv6 address of the VRRP session.

Examples

The following example shows the configuration of accept mode on an IPv6 VRRP backup router.

```
device# configure terminal
device(config)# interface ve 3
device(config-vif-3)# ipv6 vrrp vrid 2
device(config-vif-3-vrid-2)# backup
device(config-vif-3-vrid-2)# advertise backup
device(config-vif-3-vrid-2)# ipv6-address 2001:DB8::1
device(config-vif-3-vrid-2)# accept-mode
device(config-vif-3-vrid-2)# activate
```

History

Release version	Command history
08.0.01	This command was introduced.
08.0.30b	This command was modified to explain that the **accept-mode** command does not enable a response to SSH packets. The usage guidelines were also updated.

accept-register

Configures the register message filter rule for Protocol Independent Multicast (PIM) and IPv6 Protocol Independent Multicast (PIMv6).

Syntax

accept-register *string*

no accept-register *string*

Command Default

The register message filter rule for PIM and PIMv6 is not configured.

Parameters

string

Specifies an extended access control list (ACL) name or number that defines the (S, G) traffic in PIM register messages to be permitted or denied.

Modes

PIM router configuration mode

IPv6 PIM router configuration mode

Usage Guidelines

This command can be used on rendezvous point (RP) switches. When a configured access control list (ACL) is unavailable, the deny rule for any (S, G) pair is applied.

The **no** form of the command removes the register message filter rule for PIM and PIMv6.

Examples

The following example configures the register message filter rule for PIM with a specified ACL.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# accept-register pim_reg_filter
```

The following example removes the register message filter rule for PIM with a specific configured ACL.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# no accept-register pim_reg_filter
```

The following example configures the register message filter rule for PIMv6 with a specified ACL.

```
device# configure terminal
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# accept-register pim_reg_acl
```

History

Release version	Command history
09.0.10	This command was introduced.

access-control vlan

Enables the VLAN containment for Network Time Protocol (NTP).

Syntax

access-control vlan *vlan-id*

no access-control vlan *vlan-id*

Command Default

VLAN containment for NTP is not enabled.

Parameters

vlan-id

Specifies the VLAN ID number.

Modes

NTP configuration mode

Usage Guidelines

The management interface is not part of any VLAN. When configuring the VLAN containment for NTP, the management interface is not used to send or receive the NTP packets.

When VLAN is configured,

- NTP time servers should be reachable through the interfaces that belong to the configured VLAN. Otherwise, NTP packets are not transmitted. NTP packets are not trasmitted in the case of both the unicast and the broadcast server/client if the servers are not reachable through the interfaces that belong to the configured VLAN.
- NTP broadcast packets are sent only on the interface that belongs to the configured VLAN.
- The received unicast or broadcast NTP packets are dropped if the interface on which the packets have been received does not belong to the configured VLAN.

The **no** form of the command removes the specified VLAN containment for NTP.

Examples

The following example enables VLAN containment for NTP.

```
device(config)# ntp
device(config-ntp)# access-control vlan 100
```

access-list accounting timer

Sets frequency of ACL accounting statistics collection.

Syntax

access-list { **accounting timer** *period* }

no access-list { **accounting timer** *period* }

Command Default

5000

Parameters

accounting timer *period*

Specifies how often ACL accounting statistics are collected, in increments of 1000 milliseconds. Available range is 5000 ms through 60000 ms.

Modes

Global configuration mode.

Usage Guidelines

.

Examples

The following example sets the ACL accounting timer to 7000 milliseconds.

```
device# configure terminal
device(config)# access-list accounting timer 7000
```

History

Release version	Command history
08.0.95	This command was introduced.

accounting

Enables RADIUS accounting for Web Authentication.

Syntax

accounting

no accounting

Command Default

RADIUS accounting for Web Authentication is not enabled.

Modes

Web Authentication configuration mode

Usage Guidelines

When Web Authentication is enabled, you can enable RADIUS accounting to record login (start) and logout (stop) events per host. The information is sent to a RADIUS server.

The **no** form of the command disables RADIUS accounting for Web Authentication.

Examples

The following example enables RADIUS accounting for Web Authentication.

```
device(config)# vlan 10
device(config-vlan-10# webauth
device(config-vlan-10-webauth)# accounting
```

acl-mirror-port

Configures ACL-based inbound mirroring.

Syntax

acl-mirror-port ethernet *unit/slot/port*

no acl-mirror-port ethernet *unit/slot/port*

Parameters

ethernet *unit/slot/port*

Specifies the mirror port to which the monitored port traffic is copied.

Modes

Interface configuration mode

Usage Guidelines

Use this command to set the destination port on which the traffic must be mirrored. The destination port must be the same for all ports in a port region. All traffic mirrored from any single port in a port region is mirrored to the same destination mirror port as traffic mirrored from any other port in the same port region. When a destination port is configured for any port within a port region, traffic from any ACL with a mirroring clause assigned to any port in that port region is mirrored to that destination port. This will occur even if a destination port is not explicitly configured for the port with the ACL configured.

To configure ACL-based mirroring for ACLs bound to virtual interfaces, use the **acl-mirror-port** command on a physical port that is a member of the same VLAN as the virtual interface. You can apply ACL-based mirroring on an entire VE, and enable mirroring in only one port region; traffic that is in the same VE but on a port in a different port region will not be mirrored. If a port is in both mirrored and non-mirrored VLANs, only traffic on the port from the mirrored VLAN is mirrored.

NOTE
If a destination mirror port is not configured for any ports within the port region where the port-mirroring ACL is configured, the ACL does not mirror the traffic but the ACL is applied to traffic on the port.

The **no** form of the command removes the ACL mirror port.

Examples

The following example shows the ACL mirroring traffic from port 1/1/1 is mirrored to port 1/1/3.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# acl-mirror-port ethernet 1/1/3
```

The following example shows that ports from a port region must be mirrored to the same destination mirror port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# acl-mirror-port ethernet 1/2/3
device(config)# interface ethernet 1/1/2
device(config-if-e10000-1/1/2)# acl-mirror-port ethernet 1/2/3
```

The following example shows ACL mirroring when the destination port within a port region is configured.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# ip access-group 101 in
device(config)# interface ethernet 1/1/3
device(config-if-e10000-1/1/3)# acl-mirror-port ethernet 1/4/3
```

The following example shows how to specify the destination mirror port for LAG ports.

```
device(config)# lag blue static id 1
device(config-lag-blue)# ports ethernet 1/1/1 to 1/1/14
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# acl-mirror-port ethernet 1/1/8
```

The following example shows how to configure ACL-based mirroring for ACLs bound to virtual interfaces.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# tagged ethernet 1/4/1 to 1/4/2
device(config-vlan-10)# tagged ethernet 1/5/3
device(config-vlan-10)# interface ve 10
device(config-vlan-10)# exit
device(config)# ip access-list extended acl102
device(config-ext-ipacl-acl102)# permit ip any any mirror
device(config-ext-ipacl-acl102)# exit
device(config)# interface ethernet 1/4/1
device(config-if-e10000-1/4/1)# acl-mirror-port ethernet 1/5/1
device(config-if-e10000-1/4/1)# exit
device(config)# interface ve 10
device(config-vif-10)# ip address 10.10.10.254/24
device(config-vif-10)# ip access-group acl102 in
device(config-vif-10)# end
device#
```

The following example shows the ACL-based mirroring for ports in both mirrored and non-mirrored VLANs.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# tagged ethernet 1/4/1 to 1/4/2
device(config-vlan-10)# tagged ethernet 1/5/3
device(config-vlan-10)# interface ve 10
device(config-vlan-10)# exit
device(config)# vlan 20
device(config-vlan-20)# tagged ethernet 1/4/1 to 1/4/2
device(config-vlan-20)# exit
device(config)# ip access-list extended acl102
device(config-ext-ipacl-acl102)# permit ip any any mirror
device(config-ext-ipacl-acl102)# exit
device(config)# interface ethernet 1/4/1
device(config-if-e10000-1/4/1)# acl-mirror-port ethernet 1/5/1
device(config-if-e10000-1/4/1)# exit
device(config)# interface ve 10
device(config-vif-10)# ip address 10.10.10.254/24
device(config-vif-10)# ip access-group acl102 in
device(config-vif-10)# end
device#
```

activate (VRRP)

Activates the configured Virtual Router Redundancy Protocol (VRRP) virtual routing instance.

Syntax

activate

no activate

Command Default

A VRRP virtual routing instance is not activated.

Modes

VRID interface configuration mode

Usage Guidelines

Before issuing this command, complete the configuration of the VRRP virtual router. The interface assigned to the Virtual Routing ID (VRID) does not provide backup service for the virtual IP address until you activate the VRRP configuration.

The **no** form of this command disables the VRRP VRID.

Examples

The following example configures and activates VRRP VRID 1.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.5.1
device(config-if-e1000-1/1/6-vrid-1)# activate
VRRP router 1 for this interface is activating
```

activate (VSRP)

Activates the Virtual Switch Redundancy Protocol (VSRP) Virtual Router ID (VRID) for a port-based VLAN.

Syntax

activate

no activate

Command Default

The VRID is not activated by default.

Modes

VSRP VRID configuration mode

Usage Guidelines

The device must be set as a backup. Because VSRP does not have an owner, all VSRP devices are backups. The active device for a VRID is elected based on the VRID priority, which is configurable.

The **no** form of the command deactivates the VSRP VRID on the VLAN.

Examples

The following example shows how to activate the VSRP on a VLAN.

```
device(config)# vlan 200
device(config-vlan-200)# tag ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup
device(config-vlan-200-vrid-1)# activate
```

add mac

Permanently authenticates certain hosts.

Syntax

add mac *mac-address* [**ethernet** *unit/slot/port*] [**duration** *time*]

no add mac *mac-address* [**ethernet** *unit/slot/port*] [**duration** *time*]

Command Default

Permanent authentication is not enabled.

Parameters

mac-address
Specifies the MAC address of the host.

ethernet *unit/slot/port*
Specifies the Ethernet interface.

duration *time*
Specifies how long the MAC address remains authenticated. Valid values are from 0 through 128,000 seconds. The default is the time configured using the **reauth-time** command. If 0 is configured, then Web Authentication for the MAC address will not expire.

Modes

Web Authentication configuration mode

Usage Guidelines

Certain hosts, such as a DHCP server, gateway, or printers, may need to be permanently authenticated. Typically, these hosts are managed by the network administrator and are considered to be authorized hosts. Also, some of these hosts (such as printers) may not have a browser and will not be able to perform the Web Authentication.

NOTE
If a MAC address is statically configured, the MAC address will not be allowed to be dynamically configured on any port.

The **no** form of the command, without any parameters, removes all hosts and sets the duration a MAC address remains authenticated to its default.

Examples

The following example configures the host with MAC address 0000.00eb.2d14 to be permanently authenticated.

```
device(config)# vlan 10
device(config-vlan-10# webauth
device(config-vlan-10-webauth)# add mac 0000.00eb.2d14 duration 0
```

The following example specifies the MAC address to be added by the specified port that is a member of the VLAN.

```
device(config)# vlan 10
device(config-vlan-10# webauth
device(config-vlan-10-webauth)# add mac 0000.00eb.2d14 ethernet 1/1/1 duration 0
```

add-vlan

Adds individual VLANs or a range of VLANs.

Syntax

add-vlan *vlan-id* [**to** *vlan-id*]

Command Default

VLANs are added when creating a VLAN group.

Parameters

vlan-id

Specifies the VLAN ID to add.

to *vlan-id*

Specifies the range of VLANs to add.

Modes

VLAN group configuration mode

Usage Guidelines

Use the **vlan-group** command to add up to 256 VLANs. To add more than 256 VLANs, use the **add-vlan** command.

NOTE

The device memory must be configured to contain at least the number of VLANs you specify for the higher end of the range. For example, if you specify 2048 as the VLAN ID at the high end of the range, you first must increase the memory allocation for VLANs to 2048 or higher. Additionally, on Layer 3 switches, if you allocate additional memory for VLANs, you also need to allocate the same amount of memory for virtual routing interfaces before you configure the VLAN groups. This is true regardless of whether you use the virtual routing interface groups. The memory allocation is required because the VLAN groups and virtual routing interface groups have a one-to-one mapping.

Examples

The following example shows how to add VLANs.

```
device(config)# vlan-group 1 vlan 2 to 1000
device(config-vlan-group-1)# add-vlan 1001 to 1002
```

address-family

Enables IPv4 or IPv6 address-family configuration mode.

Syntax

address-family { **ipv4** | **ipv6** } [**max-route** *num*]

no address-family { **ipv4** | **ipv6** } [**max-route** *num*]

Command Default

An address family is not configured.

Parameters

ipv4

Specifies an IPv4 address family.

ipv6

Specifies an IPv6 address family.

max-route *num*

Configures the maximum number routes in a VRF. The valid range is from 128 through 15168. The default is 1024.

Modes

VRF configuration mode

Usage Guidelines

Use the **no** form of this command to remove IPv4 or IPv6 address family configurations from the device.

Examples

The following example enables IPv4 address-family configuration mode:

```
device(config)# vrf red
device(config-vrf-red)# address-family ipv4
device(config-vrf-red-ipv4)#
```

address-family unicast (BGP)

Enables the IPv4 or IPv6 address family configuration mode to configure a variety of Border Gateway Protocol Version 4 (BGP4) unicast routing options.

Syntax

address-family ipv4 unicast vrf *vrf-name*

address-family ipv6 unicast [**vrf** *vrf-name*]

no address-family ipv4 unicast vrf *vrf-name*

no address-family ipv6 unicast [**vrf** *vrf-name*]

Parameters

ipv4

Specifies an IPv4 address family.

ipv6

Specifies an IPv6 address family.

vrf *vrf-name*

Specifies the name of the VRF instance to associate with subsequent address-family configuration mode commands.

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command removes IPv4 or IPv6 address family configurations from the device.

Examples

The following example enables BGP IPv6 address family configuration mode.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)#
```

The following example creates a BGP4 unicast instance for VRF green.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf green
device(config-bgp-ipv4u-vrf)#
```

History

Release version	Command history
08.0.30	Multi-VRF support was added for IPv6 BGP.

advertise backup

Advertises a Virtual Router Redundancy Protocol (VRRP) backup router to a VRRP master router.

Syntax

advertise backup

no advertise backup

Command Default

A VRRP backup router does not advertise itself to a VRRP master router.

Modes

VRID interface configuration mode

Usage Guidelines

Hello messages are used to advertise a backup router to a master router. To configure the interval at which the messages are sent, use the **backup-hello-interval** command.

The **advertise backup** command is configured only on VRRP backup routers and is supported by VRRP and VRRP-E.

The **no** form of the command disables the advertisement of a VRRP backup router to a VRRP master router.

Examples

The following example enables advertisements from the VRRP backup router and configures the hello message interval to 10 seconds.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# advertise backup
device(config-if-e1000-1/1/6-vrid-1)# backup-hello-interval 10
```

advertise backup (VSRP)

Enables a backup to send Hello messages to the master.

Syntax

advertise backup

no advertise backup

Command Default

By default, backups do not send Hello messages to advertise themselves to the master.

Modes

VSRP VRID configuration mode

Usage Guidelines

When a backup is enabled to send Hello messages, the backup sends a Hello message to the master every 60 seconds by default. You can change the interval to be up to 3600 seconds using the **backup-hello-interval** command.

The **no** form of the command disables the backup from sending the Hello messages.

Examples

The following example enables a backup to send Hello messages to the master.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup
device(config-vlan-200-vrid-1)# activate
device(config-vlan-200-vrid-1)# advertise backup
```

age

Configures the device to age out secure MAC addresses after a specified amount of time.

Syntax

age{**global-mac**|*time*[**absolute**]}

no age{**global-mac**|*time*[**absolute**]}

Command Default

By default, learned MAC addresses stay secure indefinitely.

Parameters

global-mac

Configures hardware-based aging of all secure MAC addresses.

time

Configures the age timer. Valid values range is from 0 through 1440 minutes. If 0 is specified, the MAC addresses stay secure indefintely.

absolute

Configures all secure MAC addresses to age out immediately once the specified time expires.

Modes

Port security configuration mode

Port security interface configuration mode

Usage Guidelines

If the **absolute** keyword is not specified, secure MAC addresses are aged out only when the configured hardware MAC address age time expires.

NOTE
Even though you can set the age time to specific ports independent of the device-level setting, the age timer will take the greater of the two values. If you set the age timer to 3 minutes for the port, and 10 minutes for the device, the port MAC address aging occurs in 10 minutes (the device-level setting), which is greater than the port setting that you have configured.

The **no** form of the command configures to never age out secure MAC addresses.

Examples

The following example sets the port security age timer to 10 minutes on all interfaces.

```
device(config)# port security
device(config-port-security)# age 10
```

The following example ages out secure MAC addresses immediately after one minute.

```
device(config)# port security
device(config-port-security)# age 1 absolute
```

The following example sets the port security age timer to 10 minutes on a specific interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)#port security
device(config-port-security-e1000-1/1/1)# age 10
```

aggregate-address (BGP)

Configures the device to aggregate routes from a range of networks into a single network prefix.

Syntax

aggregate-address { *ip-addr ip-mask* | *ipv6-addr ipv6-mask* } [**advertise-map** *map-name*] [**as-set**] [**attribute-map** *map-name*] [**summary-only**] [**suppress-map** *map-name*]

no aggregate-address { *ip-addr ip-mask* | *ipv6-addr ipv6-mask* } [**advertise-map** *map-name*] [**as-set**] [**attribute-map** *map-name*] [**summary-only**] [**suppress-map** *map-name*]

Command Default

The address aggregation feature is disabled. By default, the device advertises individual routes for all networks.

Parameters

ip-addr
: Specifies the IPv4 address.

ip-mask
: Specifies the IPv4 mask.

ipv6-addr
: Specifies the IPv6 address.

ipv6-mask
: Specifies the IPv6 mask.

advertise-map
: Specifies that the device advertises the more-specific routes in the specified route map.

map-name
: Specifies a route map to be consulted.

as-set
: Causes the device to aggregate AS-path information for all routes in the aggregate routes from a range of networks into a single network prefix.

attribute-map
: Causes the device to set attributes for the aggregate routes according to the specified route map.

summary-only
: Prevents the device from advertising more-specific routes contained within the aggregate route.

suppress-map
: Prevents the more-specific routes contained in the specified route map from being advertised.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

The **no** form of the command restores the defaults.

Examples

The following example aggregates routes from a range of networks into a single network prefix and prevents the device from advertising more-specific routes.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# aggregate-address 10.11.12.0 summary-only
```

The following example aggregates routes from a range of networks into a single network prefix under the IPv6 address family and advertises the paths for this route as AS_SET.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# aggregate-address 2001:DB8:12D:1300::/64 as-set
```

The following example aggregates routes from a range of networks into a single network prefix for BGP VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# aggregate-address 5.0.0.0/8
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

aggregated-vlan

Enables support for larger Ethernet frames.

Syntax

aggregated-vlan

no aggregated-vlan

Command Default

Support for larger Ethernet frames is not enabled.

Modes

Global configuration mode

Usage Guidelines

This command provides support for Ethernet frames up to 1536 bytes.

The **no** form of the command disables support for larger Ethernet frames.

Examples

The following example provides support for larger Ethernet frames.

```
device(config)# aggregated-vlan
```

alias

An alias serves as a shorthand version of a longer CLI command.

Syntax

alias

alias *alias-name* **=** *cli-command*

no alias *alias-name*

unalias *alias-name*

Command Default

No aliases are defined.

Parameters

alias-name
: Alias name. Must be a single word, without spaces.

=
: Operator representing "equals."

cli-command
: Command string for which the alias is created.

Modes

Privileged EXEC mode

Usage Guidelines

An alias saves typing in a longer command that you commonly use. For example, you can create an alias called *shoro* for the CLI command **show ip route**. Then when you enter *shoro* at the command prompt, the **show ip route** command is issued.

Entering the **alias** command with no parameters displays the currently configured aliases on the device.

The **no** form of the command or the **unalias** command followed by the alias name removes an alias.

Examples

The following example creates an alias called *shoro* for the CLI command **show ip route**, enter the **alias shoro = show ip route** command.

```
device(config)# alias shoro = show ip route
```

The following example uses the command **copy running-config** with the appropriate parameters to create an alias called *wrsbc*.

```
device(config)# alias wrsbc = copy running-config tftp 10.10.10.10 test.cfg
```

The following example removes the *wrsbc* alias from the configuration.

```
device(config)# no alias wrsbc
```

The following example is an alternate method of removing the alias.

```
device(config)# unalias wrsbc
```

To display the aliases currently configured on the RUCKUS device, enter the following command at either the Privileged EXEC or global configuration modes of the CLI.

```
device# alias
          wrsbc      copy running-config tftp 10.10.10.10 test.cfg
          shoro       show ip route
```

always-compare-med

Configures the device always to compare the Multi-Exit Discriminators (MEDs), regardless of the autonomous system (AS) information in the paths.

Syntax

always-compare-med

no always-compare-med

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command disallows the comparison of the MEDs for paths from neighbors in different autonomous systems.

Examples

The following example configures the device always to compare the MEDs.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# always-compare-med
```

always-propagate

Enables the device to reflect BGP routes even though they are not installed in the Routing Table Manager (RTM).

Syntax

always-propagate

no always-propagate

Command Default

This feature is disabled.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Use the **no** form of this command to restore the default.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

This example configures the device to reflect routes that are not installed in the RTM.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# always-propagate
```

This example configures the device to reflect routes that are not installed in the RTM in IPv6 address-family unicast configuration mode.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# always-propagate
```

This example configures the device to reflect routes that are not installed in the RTM in a nondefault VRF instance.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# always-propagate
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

anycast-rp

Configures PIM anycast rendezvous points (RPs) in IPv4 and IPv6 multicast domains.

Syntax

anycast-rp *rp-address anycast-rp-set-acl*

no anycast-rp *rp-address anycast-rp-set-acl*

Command Default

PIM anycast RPs are not configured.

Parameters

rp-address

Specifies a shared RP address used among multiple PIM routers.

anycast-rp-set-acl

Specifies a host-based simple access -control list (ACL) used to specify the address of the anycast RP set, including a local address.

Modes

PIM router configuration mode

Usage Guidelines

PIM anycast RP is a way to provide load balancing and fast convergence to PIM RPs in an IPv4 or IPv6 multicast domain. The RP address of the anycast RP is a shared address used among multiple PIM routers, known as PIM RP.

The PIM software supports up to eight PIM anycast RP routers. All deny statements in the my-anycast-rp-set-acl ACL are ignored.

The **no** form of the command removes the anycast RP configuration.

Examples

The following example shows how to configure a PIM anycast RP.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# rp-address 100.1.1.1
device(config-pim-router)# anycast-rp 100.1.1.1 my-anycast-rp-set-acl
```

The following example shows how to configure PIM anycast RP 100.1.1.1.The example avoids using loopback 1 interface when configuring PIM Anycast RP because the loopback 1 address could be used as a router-id. A PIM first-hop router registers the source with the closest RP. The first RP that receives the register re-encapsulates the register to all other anycast RP peers.

```
device# configure terminal
device(config)# interface loopback 2
device(config-lbif-2)# ip address 100.1.1.1/24
device(config-lbif-2)# ip pim-sparse
device(config-lbif-2)# interface loopback 3
device(config-lbif-3)# ip address 1.1.1.1/24
device(config-lbif-3)# ip pim-sparse
device(config-lbif-3)# router pim
device(config-pim-router)# rp-address 100.1.1.1
device(config-pim-router)# anycast-rp 100.1.1.1 my-anycast-rp-set
device(config-pim-router)# ip access-list standard my-anycast-rp-set
device(config-std-ipacl-my-anycast-rp-set)# permit host 1.1.1.1
device(config-std-ipacl-my-anycast-rp-set)# permit host 2.2.2.2
device(config-std-ipacl-my-anycast-rp-set)# permit host 3.3.3.
```

The following example shows how to configure a PIM anycast RP for a VRF.

```
device# configure terminal
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# rp-address 1001::1
device(config-ipv6-pim-router-vrf-blue)# anycast-rp 1001::1 my-anycast-rp-set-acl
```

The following example shows how to configure PIM anycast RP 1001:1 so that it avoids using loopback 1.

```
device# configure terminal
device(config)# interface loopback 2
device(config-lbif-2)# ipv6 address 1001::1/96
device(config-lbif-2)# ipv6 pim-sparse
device(config-lbif-2)# interface loopback 3
device(config-lbif-3)# ipv6 address 1:1:1::1/96
device(config-lbif-3)# ipv6 pim-sparse
device(config-lbif-3)# ipv6 router pim
device(config-ipv6-pim-router)# rp-address 1001::1
device(config-ipv6-pim-router)# anycast-rp 1001::1 my-anycast-rp-set
device(config-ipv6-pim-router)# ipv6 access-list my-anycast-rp-set
device(config-std-ipacl-my-anycast-rp-set)# permit ipv6 host 1:1:1::1 any
device(config-std-ipacl-my-anycast-rp-set)# permit ipv6 host 2:2:2::2 any
device(config-std-ipacl-my-anycast-rp-set)# permit ipv6 host 3:3:3::3 any
```

area authentication (OSPFv3)

Configures HMAC-SHA-1 or HMAC-SHA-256 authentication for an Open Shortest Path First version 3 (OSPFv3) area.

Syntax

area *area-id* **authentication** { **hmac-sha-1** | **hmac-sha-256**} **key-id** *key-id-val* **key** *key-string*

no area *area-id* **authentication** { **HMAC-SHA-1** | **HMAC-SHA-256**} **key-id** *key-id-val* **key** *key-string*

Command Default

HMAC-SHA-1 or HMAC-SHA-256 authentication is disabled by default.

Parameters

hmac-sha-1
Specifies the HMAC-SHA-1 authentication.

hmac-sha-256
Specifies the HMAC-SHA-256 authentication.

key-id-val
Identifies the number of the HMAC-SHA-1 or HMAC-SHA-256 algorithm. The number can be from 1 through 255.

key-string
Sets the corresponding key-string to be used with the HMAC-SHA-1 or HMAC-SHA-256 algorithm.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the HMAC-SHA-1 or HMAC-SHA-256 authentication configuration for an OSPFv3 area. All interfaces within the area are configured to use these authentication parameters.

It is possible to remove this configuration from individual interfaces using the **ipv6 ospf authentication disable** command on the required interface.

The **no** form of the command removes the HMAC-SHA-1 or HMAC-SHA-256 authentication configuration from the OSPFv3 area.

Examples

The following example sets HMAC-SHA-1 authentication with key ID 10 and the password key "mypasswordkey", on the OSPFv3 area.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 authentication hmac-sha-1 key-id 10 key mypasswordkey
```

History

Release version	Command history
08.0.70	This command was introduced.

area authentication keychain (OSPFv3)

Configures keychain authentication for an Open Shortest Path First version 3 (OSPFv3) area.

Syntax

area *area-id* **authentication keychain** *keychain-name*

no area *area-id* **authentication keychain** *keychain-name*

Command Default

Keychain authentication is disabled by default.

Parameters

area-id

Specifies an area.

keychain-name

Specifies the name of the keychain that OSPFv3 uses to authenticate the packets.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the keychain authentication configuration for an OSPFv3 area. All interfaces within the area are configured to use these authentication parameters.

It is possible to remove this configuration from individual interfaces using the **ipv6 ospf authentication disable** command on the required interface.

The **no** form of the command removes the keychain authentication configuration from the OSPFv3 area.

Examples

The following example configures the OSPFv3 area to use the keychain authentication module with the "xtreme" keychain.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 authentication keychain xtreme
```

History

Release version	Command history
08.0.70	This command was introduced.

area nssa (OSPFv2)

Creates a not-so-stubby area (NSSA) or modifies its parameters.

Syntax

area { *ip-addr* | *decimal* } **nssa** { *metric* [**no-summary**] | **default-information-originate** }

no area nssa

Command Default

No areas are created.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address In decimal format.

metric
: Additional cost for using a route to or from this area.

no-summary
: When configured on the NSSA area border router (ABR), this parameter prevents any Type 3 and Type 4 summary link-state advertisement (LSA) from being injected into the area. The only exception is that a default route is injected into the NSSA by the ABR, and strictly as a Type 3 LSA (not a Type 7, because that could cause intra-AS traffic to get routed out the AS). This makes the NSSA an NSSA totally stubby area, which can only have Type 1, 2 and 7 LSAs. **Note:** This parameter is disabled by default, which means the default route must use a Type 7 LSA.

default-information-originate
: When configured on the ABR, this parameter injects a Type 7 default route into the NSSA area. As a result, the other NSSA routers install the default route through the advertising NSSA ABR. By default the NSSA ABR does not originate a default route to the NSSA.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

NSSAs are typically needed when one-way transmission of Type-5 LSAs (out of the area) is desired but injection of the same LSAs into the area is not acceptable.

Once created, the type of the area cannot be changed. The only exception to this rule is that an NSSA or stub area can be changed to a totally NSSA or a totally stub area, respectively.

The **no** form of the command deletes a NSSA.

Examples

The following example sets an additional cost of 5 on an NSSA identified as 2, includes the no-summary parameter, and prevents the device from importing type 3 and type 4 summary LSAs into the NSSA area.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# area 2 nssa 5 no-summary
```

area nssa (OSPFv3)

Creates a not-so-stubby area (NSSA) or modifies its parameters.

Syntax

area { *ip-addr* | *decimal* } **nssa** [*metric*] [**default-information-originate** [**metric** *num*] [**metric-type** { **type1** | **type2** }]] [**no-redsitribution**] [**no-summary**] [**translator-always**] [**translator-interval** *interval*]

no area nssa

Command Default

No areas are created.

Parameters

ip-addr

Area address in IP address format.

decimal

Area address in decimal format.

metric

Additional cost for using a route to or from this area. Valid values range from 1 through 1048575.

default-information-originate

When configured on the ABR, this parameter injects a Type 7 default route into the NSSA area. As a result, the other NSSA routers install the default route through the advertising NSSA ABR. By default the NSSA ABR does not originate a default route to the NSSA.

metric-type

Specifies how the cost of a neighbor metric is determined.

type1

The metric of a neighbor is the cost between itself and the router plus the cost of using this router for routing to the rest of the world.

type2

The metric of a neighbor is the total cost from the redistributing routing to the rest of the world.

no-redistribution

The no-redistribution parameter prevents an NSSA ABR from generating external (type-7) LSA into a NSSA area. This is used in the case where an ASBR should generate type-5 LSA into normal areas and should not generate type-7 LSA into a NSSA area. By default, redistribution is enabled in a NSSA.

no-summary

When configured on the NSSA area border router (ABR), this parameter prevents any Type 3 and Type 4 summary link-state advertisement (LSA) from being injected into the area. The only exception is that a default route is injected into the NSSA by the ABR, and strictly as a Type 3 LSA (not a Type 7, because that could cause intra-AS traffic to get routed out the AS). This makes the NSSA a NSSA totally stubby area, which can only have Type 1, 2 and 7 LSAs. **Note:** This parameter is disabled by default, which means the default route must use a Type 7 LSA.

translator-always

Configures the translator-role. When configured on an ABR, this causes the router to unconditionally assume the role of a NSSA translator. By default, translator-always is not set, the translator role by default is candidate.

translator-interval *interval*

Configures the time interval for which an elected NSSA translator continues to perform its duties even after its NSSA translator role has been disposed by another router. Valid values range from 10 through 60 seconds. By default the stability-interval is 40 seconds.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

NSSAs are typically needed when one-way transmission of Type-5 LSAs (out of the area) is desired but injection of the same LSAs into the area is not acceptable.

Once created, the type of the area cannot be changed. The only exception to this rule is that a NSSA or stub area can be changed to a totally NSSA or a totally stub area, respectively.

The **no** form of the command deletes a NSSA.

Examples

The following example sets an additional cost of 4 on a NSSA identified as 8 (in decimal format), and prevents any Type 3 or Type 4 summary LSAs from being injected into the area.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 8 nssa 4 no-summary
```

area range (OSPFv2)

Specifies area range parameters on an area border router (ABR).

Syntax

area { *A.B.C.D* | *decimal* } **range** *E.F.G.H I.J.K.L*

area { *A.B.C.D* | *decimal* } **range** *E.F.G.H I.J.K.L* **advertise** [**cost** *cost_value*]

area { *A.B.C.D* | *decimal* } **range** *E.F.G.H I.J.K.L* **cost** *cost_value*

area { *A.B.C.D* | *decimal* } **range** *E.F.G.H I.J.K.L* **not-advertise** [**cost** *cost_value*]

no area range

Command Default

The address range is advertised.

Parameters

A.B.C.D
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H I.J.K.L
: Specifies the IP address and mask portion of the range. All network addresses that match this network are summarized in a single route and advertised by the ABR.

advertise
: Sets the address range status to *advertise* and generates a Type 3 summary LSA.

cost *cost_value*
: Sets the cost value for the area range. This value is used as the generated summary LSA cost. The range for *cost_value* is 1 to 6777214. If this value is not specified, the cost value is the default range metric calculation for the generated summary LSA cost.

not-advertise
: Sets the address range status to DoNotAdvertise; the Type 3 LSA is suppressed, and the component networks remain hidden from other networks. This setting is used to temporarily pause route summarization from the area.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Use this command only on ABRs to specify route summarization for an existing area. The result is that a single summary route is advertised to other areas by the ABR, in the form of a Type 3 LSA. Routing information is condensed at area boundaries and external to the area, and only a single route is advertised for each address range.

An example of when you might want to use this command is if you have many small networks advertised from area 0 to any other area, or from any non-backbone area into the backbone. This command gives you a summary route instead of many smaller routes. In an area, the OSPF database on each router must be an exact copy of the databases of the other routers. This means that no summarization is allowed within the area.

The **no** form of the command disables the specification of range parameters on an ABR.

Examples

The following example advertises to Area 3 all the addresses on the network 10.1.1.0 10.255.255.0 in the ABR you are signed into.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# area 3 range 10.1.1.0 10.255.255.0 advertise
```

area range (OSPFv3)

Specifies area range parameters on an area border router (ABR).

Syntax

area { *ip-addr* | *decimal* } **range** *ipv6 address/mask* [**advertise** | **not-advertise**] [**cost** *cost_value*]

no area range

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

ipv6 address/mask
: Specifies the IPv6 address in dotted-decimal notation and the IPv6 mask in CIDR notation. All network addresses that match this network are summarized in a single route and advertised by the ABR.

advertise
: Sets the address range status to *advertise* and generates a Type 3 summary LSA.

cost *cost_value*
: Sets the cost value for the area range. This value is used as the generated summary LSA cost. The range for *cost_value* is 1 to 6777214. If this value is not specified, the cost value is the default range metric calculation for the generated summary LSA cost.

not-advertise
: Sets the address range status to DoNotAdvertise; the Type 3 LSA is suppressed, and the component networks remain hidden from other networks. This setting is used to temporarily pause route summarization from the area.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command only on ABRs to specify route summarization for an existing area. The result is that a single summary route is advertised to other areas by the ABR, in the form of a Type 3 LSA. Routing information is condensed at area boundaries and external to the area, and only a single route is advertised for each address range.

An example of when you might want to use this command is if you have many small networks advertised from area 0 to any other area, or from any non-backbone area into the backbone. This command gives you a summary route instead of many smaller routes. In an area, the OSPF database on each router must be an exact copy of the databases of the other routers. This means that no summarization is allowed within the area.

The **no** form of the command disables the specification of range parameters on an ABR.

Examples

The following example advertises to Area 3 all the addresses on the network 2001:db8:8::/45 in the ABR you are signed into.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 3 range 2001:db8:8::/45 advertise
```

area stub (OSPFv2)

Creates or deletes a stub area or modifies its parameters.

Syntax

area { *ip-addr* | *decimal* } **stub** *metric* [**no-summary**]

no area stub

Command Default

No areas are created.

Parameters

A.B.C.D

Area address in IP address format.

decimal

Area address In decimal format.

metric

Additional cost for using a route to or from this area. Valid values range from 1 through 6777215.

no-summary

When configured on the ABR, this parameter prevents any Type 3 and Type 4 summary LSAs from being injected into the area. The only exception is that a default route is injected into the stub/totally stubby area by the ABR as a Type 3 LSA. Enabling this parameter makes the area a so-called totally stubby area, which can only have Types 1 and 2. This parameter is disabled by default.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Once created, the type of the area cannot be changed. The only exception to this rule is that a NSSA or stub area can be changed to a totally NSSA or a totally stub area, respectively.

The **no** form of the command deletes a stub area.

Examples

The following example sets an additional cost of 5 on a stub area called 2.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# area 2 stub 5
```

area stub (OSPFv3)

Creates or deletes a stub area or modifies its parameters.

Syntax

area { *ip-addr* | *decimal* } **stub** *metric* [**no-summary**]

no area stub

Command Default

No areas are created.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address In decimal format.

metric
: Additional cost for using a route to or from this area. Valid values range from 3 through 1048575.

no-summary
: When configured on the ABR, this parameter prevents any Type 3 and Type 4 summary LSAs from being injected into the area. The only exception is that a default route is injected into the stub/totally stubby area by the ABR as a Type 3 LSA. Enabling this parameter makes the area a so-called totally stubby area, which can only have Types 1 and 2. This parameter is disabled by default.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Once created, the type of the area cannot be changed. The only exception to this rule is that a NSSA or stub area can be changed to a totally NSSA or a totally stub area, respectively.

The **no** form of the command deletes a stub area.

Examples

The following example sets an additional cost of 5 on a stub area called 2.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 2 stub 5
```

area virtual-link (OSPFv2)

Creates or modifies virtual links for an Open Shortest Path First version 2 (OSPFv2) area.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* [**dead-interval** *time*] [**hello-interval** *time*] [**retransmit-interval** *time*] [**transmit-delay** *time*]

no area virtual-link

Command Default

No virtual links are created.

Parameters

ip-addr

Area address in IP address format.

decimal

Area address in decimal format.

E.F.G.H

ID of the OSPF router at the remote end of the virtual link.

dead-interval *time*

How long a neighbor router waits for a hello packet from the current router before declaring the router down. This value must be the same for all routers and access servers that are attached to a common network. Valid values range from 3 through 65535 seconds. The default is 40 seconds.

hello-interval *time*

Time between hello packets that the router sends on an interface. The value must be the same for all routers and access servers that are attached to a common network. Valid values range from 1 through 65535 seconds. The default is 10 seconds.

retransmit-interval *time*

Time between Link State Advertisement (LSA) retransmissions for adjacencies belonging to the interface. Set this interval to a value larger than the expected round-trip delay between any two routers on the attached network. Valid values range from 0 through 3600 seconds. The default is 5 seconds.

transmit-delay *time*

Estimated time required to send an LSA on the interface. This value must be an integer greater than zero. The age of each LSA in the update packet is incremented by the value of this parameter before transmission occurs. Valid values range from 0 through 3600 seconds. The default is 1 second.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

The **no** form of the command removes a virtual link.

Examples

The following example creates a virtual link for an area whose decimal address is 1, and where the ID of the OSPFv2 device at the remote end of the virtual link is 10.1.2.3.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# area 1 virtual-link 10.1.2.3
```

area virtual-link (OSPFv3)

Creates or modifies virtual links for an area.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *A.B.C.D* [**dead-interval** *time* | **hello-interval** *time* | **hello-jitter** *interval* | **retransmit-interval** *time* | **transmit-delay** *time*]

no area virtual-link

Command Default

No virtual links are created.

Parameters

ip-addr

Area address in IP address format.

decimal

Area address in decimal format.

A.B.C.D

ID of the OSPFv3 device at the remote end of the virtual link.

dead-interval *time*

How long a neighbor device waits for a hello packet from the current device before declaring the device down. This value must be the same for all devices and access servers that are attached to a common network. Valid values range from 3 through 65535 seconds. The default is 40 seconds.

hello-interval *time*

Time between hello packets that the device sends on an interface. The value must be the same for all devices and access servers that are attached to a common network. Valid values range from 1 through 65535 seconds. The default is 10 seconds.

hello-jitter *interval*

Sets the allowed jitter between hello packets. Valid values range from 1 through 50 percent (%). The default value is 10%.

retransmit-interval *time*

Time between Link State Advertisement (LSA) retransmissions for adjacencies belonging to the interface. Set this interval to a value larger than the expected round-trip delay between any two devices on the attached network. Valid values range from 0 through 3600 seconds. The default is 5 seconds.

transmit-delay *time*

Estimated time required to send an LSA on the interface. This value must be an integer greater than zero. The age of each LSA in the update packet is incremented by the value of this parameter before transmission occurs. Valid values range from 0 through 3600 seconds. The default is 1 second.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

The values of the **dead-interval** and **hello-interval** parameters must be the same at both ends of a virtual link. Therefore, if you modify the values of these parameters at one end of a virtual link, you must make the same modifications on the other end of the link. The values of the other virtual link parameters do not require synchronization.

The **no** form of the command removes a virtual link.

Examples

The following example creates a virtual link for an area whose decimal address is 1, and where the ID of the OSPFv3 device at the remote end of the virtual link is 209.157.22.1.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 virtual-link 209.157.22.1
```

area virtual-link authentication (OSPFv2)

Configures MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication for an Open Shortest Path First version 2 (OSPFv2) area virtual link.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication** { **md5** | **hmac-sha-1** | **hmac-sha-256**} **key-id** *key-id-val* **key** *key-string*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication**

Command Default

MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication is disabled by default.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

md5
: Specifies MD5 authentication.

hmac-sha-1
: Specifies HMAC-SHA-1 authentication.

hmac-sha-256
: Specifies HMAC-SHA-256 authentication.

key-id *key-id-val*
: Identifies the number of the MD5, HMAC-SHA-1 or HMAC-SHA-256 algorithm. The number can be from 1 through 255.

key *key-string*
: Sets the corresponding key string to be used with the MD5, HMAC-SHA-1 or HMAC-SHA-256 algorithm. The recommended key string length is 1 through 63 characters.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Use this command to set or reset the MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication configuration on the OSPFv2 area virtual link.

The **no** form of the command removes MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication configuration from the OSPFv2 area virtual link.

Examples

The following example enables HMAC-SHA-1 authentication using the key ID 10 and key string "mypasswordkey" on the specified area virtual link.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# router ospf
device(config-ospf-router)# area 1 virtual-link 20.1.1.1 authentication hmac-sha-1 key-id 10 key
mypasswordkey
```

History

Release version	Command history
08.0.70	This command was introduced.

area virtual-link authentication (OSPFv3)

Enables HMAC-SHA-1 or HMAC-SHA-256 authentication for virtual links in an OSPFv3 area.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication** { **hmac-sha-1** | **hmac-sha-256**} **key-id** *key-id-val* **key** *key-string*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication**

Command Default

Authentication is not enabled on a virtual-link.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

hmac-sha-1
: Specifies HMAC-SHA-1 authentication.

hmac-sha-256
: Specifies HMAC-SHA-256 authentication.

key-id *key-id-val*
: Identifies the number of the HMAC-SHA-1 or HMAC-SHA-256 algorithm. The number can be from 1 through 255.

key *key-string*
: Sets the corresponding key string to be used with the HMAC-SHA-1 or HMAC-SHA-256 algorithm. The recommended key string length is 1 through 63 characters.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command to set or reset the HMAC-SHA-1 or HMAC-SHA-256 authentication configuration on the OSPFv3 area virtual link.

The **no** form of the command removes HMAC-SHA-1 or HMAC-SHA-256 authentication configuration from the OSPFv3 area virtual link.

Examples

The following example enables HMAC-SHA-1 authentication using the key ID 10 and key string "mypasswordkey" on the specified area virtual link.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 virtual-link 20.1.1.1 authentication hmac-sha-1 key-id 10 key
mypasswordkey
```

area virtual-link authentication key-activation-wait-time (OSPFv2)

Configures the time before an authentication key change is activated for an Open Shortest Path First version 2 (OSPFv2) area virtual link.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication key-activation-wait-time** *wait-time*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication key-activation-wait-time** *wait-time*

Command Default

The keychain wait time default is 300 seconds.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

wait-time
: Specifies the time before an authentication key change takes place. The wait time can be set from 0 through 14400 seconds.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Use this command to set or reset the wait time before an authentication key change takes place on the OSPFv2 area virtual link.

The **no** form of the command resets the wait time to the default of 300 seconds.

Examples

The following example sets the wait time before an authentication key change to 600 seconds on the OSPFv2 area virtual link.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# router ospf
device(config-ospf-router)# area 1 virtual-link 20.1.1.1 authentication key-activation-wait-time 600
```

History

Release version	Command history
08.0.70	This command was introduced.

area virtual-link authentication key-activation-wait-time (OSPFv3)

Configures the time before an authentication key change is activated for an Open Shortest Path First version 3 (OSPFv3) area virtual link.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication key-activation-wait-time** *wait-time*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication key-activation-wait-time** *wait-time*

Command Default

The keychain wait time default is 300 seconds.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

wait-time
: Specifies the time before an authentication key change takes place. The wait time can be set from 0 through 14400 seconds.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command to set or reset the wait time before an authentication key change takes place on the OSPFv3 area virtual link.

The **no** form of the command resets the wait time to the default of 300 seconds.

Examples

The following example sets the wait time before an authentication key change to 600 seconds on the OSPFv3 area virtual link.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 virtual-link 20.1.1.1 authentication key-activation-wait-time 600
```

History

Release version	Command history
08.0.70	This command was introduced.

area virtual-link authentication keychain (OSPFv2)

Configures keychain authentication for Open Shortest Path First version 2 (OSPFv2) area virtual link.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication keychain** *keychain-name*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication**

Command Default

Keychain authentication is disabled by default.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

authentication keychain *keychain-name*
: Specifies the name of the keychain that OSPFv2 uses to authenticate the packets.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

The keychain authentication module provides the OSPFv2 protocol the option to automatically change the key ID and cryptographic algorithm without manual intervention.

With this configuration, OSPFv2 requests the keychain authentication module for all active keys in the keychain and selects the keys for sending and accepting the packets.

The **no** form of the command removes keychain authentication from the OSPFv2 area virtual link.

Examples

The following example configures the OSPFv2 area virtual link to use the keychain authentication module with the "ruckus" keychain.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# router ospf
device(config-ospf-router)# area 1 virtual-link 20.1.1.1 authentication keychain ruckus
```

History

Release version	Command history
08.0.70	This command was introduced.

area virtual-link authentication keychain (OSPFv3)

Configures keychain authentication for Open Shortest Path First version 3 (OSPFv3) area virtual link.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication keychain** *keychain-name*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication**

Command Default

Keychain authentication is disabled by default.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

authentication keychain *keychain-name*
: Specifies the name of the keychain that OSPFv3 uses to authenticate the packets.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

The keychain authentication module provides the OSPFv3 protocol the option to automatically change the key ID and cryptographic algorithm without manual intervention.

With this configuration, OSPFv3 requests the keychain authentication module for all active keys in the keychain and selects the keys for sending and accepting the packets.

The **no** form of the command removes keychain authentication from the OSPFv3 area virtual link.

Examples

The following example configures the OSPFv3 area virtual link to use the keychain authentication module with the "xtreme" keychain.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 virtual-link 20.1.1.1 authentication keychain ruckus
```

History

Release version	Command history
08.0.70	This command was introduced.

area virtual-link authentication plain-text (OSPFv2)

Configures simple password-based authentication for an Open Shortest Path First version 2 (OSPFv2) area.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication plain-text** *key-string*

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication plain-text** *key-string*

Command Default

Password-based authentication is disabled by default.

Parameters

ip-addr
: Area address in IP address format.

decimal
: Area address in decimal format.

E.F.G.H
: ID of the OSPF router at the remote end of the virtual link.

key-string
: Sets the authentication password. The key string is unencrypted and appended to the outgoing message.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Use this command to set or reset simple password-based authentication on the OSPFv2 area virtual link.

The **no** form of the command removes plain text authentication from the OSPFv2 area virtual link.

Examples

The following example configures the authentication password "mystring" in plain text on the OSPFv2 area virtual link.

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# router ospf
device(config-ospf-router)# area 1 virtual-link 20.1.1.1 authentication plain-text mystring
```

History

Release version	Command history
08.0.70	This command was introduced.

area virtual-link authentication rfc6506 (OSPFv3)

Configures keychain authentication in accordance with RFC 6506 for an Open Shortest Path First version 3 (OSPFv3) area virtual link.

Syntax

area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication rfc6506**

no area { *ip-addr* | *decimal* } **virtual-link** *E.F.G.H* **authentication**

Command Default

RFC 6506 authentication is disabled by default.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command to set or reset authentication in accordance with RFC 6506 on the OSPFv3 area virtual link. This may be required for backward compatibility. Although RFC 6506 is superseded by RFC 7166, some vendors continue to support RFC 6506. To ensure interoperability with vendor equipment that supports RFC 6506, use this command in conjunction with the required authentication options.

The **no** form of the command removes the RFC 6506 authentication configuration from the OSPFv3 area virtual link.

Examples

The following example sets HMAC-SHA-1 authentication, in accordance with RFC 6506, on the OSPFv3 area virtual link. HMACSHA-1 authentication is enabled using key-id "1", key "0 1234567890123456789".

```
device# configure terminal
device(config)# ip router-id 10.1.1.1
device(config)# ipv6 router ospf
device(config-ospf6-router)# area 1 virtual-link 20.1.1.1 authentication rfc6506
device(config-ospf6-router)# area 1 virtual-link 20.1.1.1 authentication hmac-sha-1 key-id 1 key 0
1234567890123456789
```

History

Release version	Command history
08.0.70	This command was introduced.

arp

Creates static ARP entry.

Syntax

arp *ip-address mac-address* { **ethernet** *unit/slot/port* | **lag** *lag-id* | **inspection** }

no arp *ip-address mac-address* { **ethernet** *unit/slot/portunit/slot/port* | **lag** *lag-id* | **inspection** }

Command Default

Static ARP entries are not configured.

Parameters

ip-address
: Specifies the IP address of the device that has the MAC address of the entry.

mac-address
: Specifies the MAC address of the entry.

ethernet *unit/slot/port*
: Specifies the Ethernet interface.

lag *lag-id*
: Specifies the LAG virtual interface.

inspection
: Specifies the ARP inspection entry.

Modes

Global configuration mode

Usage Guidelines

RUCKUS Layer 3 switches have a static ARP table, in addition to the regular ARP cache. The static ARP table contains entries that you configure.

Static entries are useful in cases where you want to pre-configure an entry for a device that is not connected to the Layer 3 switch, or you want to prevent a particular entry from aging out. The software removes a dynamic entry from the ARP cache if the ARP aging interval expires before the entry is refreshed. Static entries do not age out, regardless of whether the ICX device receives an ARP request from the device that has the entry address.

NOTE
You cannot create static ARP entries on a Layer 2 switch.

The maximum number of static ARP entries you can configure depends on the software version running on the device.

The **no** form of the command removes the configured static ARP entry.

Examples

The following example creates a static ARP entry.

```
device(config)# arp 10.53.4.2 0000.0054.2348 ethernet 1/1/2
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

arp inspection trust

Enables dynamic ARP inspection (DAI) trust on a port.

Syntax

arp inspection trust [**vrf** *vrf-name*]

no arp inspection trust [**vrf** *vrf-name*]

Command Default

The default trust setting for a port is untrusted.

Parameters

vrf *vrf-name*

Specifies a VRF instance.

Modes

Interface subtype configuration mode

Usage Guidelines

For ports that are connected to host ports, leave their trust settings as untrusted.

You can enable DAI on individual VLANs and assign any interface as the ARP inspection trust interface. If an interface is a tagged port in this VLAN, you can turn on the trust port per VRF, so that traffic intended for other VRF VLANs will not be trusted.

The **no** form of the command disables dynamic ARP inspection trust on a port.

Examples

The following example enables dynamic ARP inspection trust on for an Ethernet interface.

```
device# configure terminal
device (config)# interface ethernet 1/1/4
device(config-if-e10000-1/1/4)# arp inspection trust
```

The following example enables dynamic ARP inspection trust on for an Ethernet interface for VRF green.

```
device# configure terminal
device (config)# interface ethernet 1/1/4
device(config-if-e10000-1/1/4)# arp inspection trust vrf green
```

arp-internal-priority

Configures the priority of ingress ARP packets.

Syntax

arp-internal-priority *priority-value*

Command Default

The default priority of ingress ARP packets is 4.

Parameters

priority-value

Specifies the priority value of the ingress ARP packets. It can take a value in the inclusive range of 0 to 7, where 7 is the highest priority.

Modes

Global configuration mode

Usage Guidelines

High traffic volume or non-ARP packets with a higher priority may cause ARP packets to be dropped, thus causing devices to become temporarily unreachable. You can use this command to increase the priority of ingress ARP packets. However, if the priority of ARP traffic is increased, a high volume of ARP traffic might cause drops in control traffic, possibly causing traffic loops in the network.

Stacking packets have a priority value of 7 and have higher precedence over ARP packets. If the ARP packets have priority value 7 in a stack system, they will be treated as priority value 6 packets when compared to stacking packets.

This command does not affect the priority of egress ARP packets.

You cannot change the priority of ingress ARP packets on the management port.

Examples

The following example sets the priority of ingress ARP packets to a value of 7.

```
device(config)# arp-internal-priority 7
```

History

Release version	Command history
08.0.01	This command was introduced.

as-path-ignore

Disables the comparison of the autonomous system (AS) path lengths of otherwise equal paths.

Syntax

as-path-ignore

no as-path-ignore

Command Default

The comparison of the AS path lengths of otherwise equal paths is enabled.

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command restores default behavior.

Examples

The following example configures the device to always disable the comparison of AS path lengths.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# as-path-ignore
```

atalk-proto

Configures the AppleTalk protocol-based VLAN.

Syntax

atalk-proto [**name** *string*]

no atalk-proto [**name** *string*]

Command Default

An AppleTalk protocol-based VLAN is not configured.

Parameters

name *string*

Specifies the name of the AppleTalk protocol you want to configure on a VLAN. The name can be up to 32 characters in length.

Modes

VLAN configuration mode

Usage Guidelines

The device sends AppleTalk broadcasts to all ports within the AppleTalk protocol-based VLAN.

The **no** form of the command disables the AppleTalk protocol-based VLAN.

Examples

The following example shows how to configure an AppleTalk protocol-based VLAN.

```
device(config)# vlan 10 by port
device(config-vlan-10)# untagged ethernet 1/1/1 to 1/1/6
added untagged port ethe 1/1/1 to 1/1/6 to port-vlan 30.
device(config-vlan-10)# atalk-proto name Atalk_Prot_VLAN
```

attempt-max-num

Configures the number of times a user can enter an invalid username and password; that is, the number of Web Authentication attempts during the specified cycle time.

Syntax

attempt-max-num *number*

no attempt-max-num *number*

Command Default

The default number of Web Authentication attempts allowed is five.

Parameters

number

Specifies the number of Web Authentication attempts. Valid values are from 0 through 64. If you configure 0, there is no limit on the number of attempts. The default is five attempts.

Modes

Web Authentication configuration mode

Usage Guidelines

You can set a limit on the number of times a user enters an invalid username and password during the specified cycle time. If the user exceeds the limit, the user is blocked for a duration of time, which is defined by the **block duration** command. Also, the Web browser will be redirected to the Exceeded Allowable Attempts web page.

The **no** form of the command sets the number of Web Authentication attempts to the default.

Examples

The following example limits the number of Web Authentication attempts to 10.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# attempt-max-num 10
```

auth allow-tagged enable

Allows tagged packets to be processed when the port is not tagged in the incoming tagged VLAN.

Syntax

auth allow-tagged enable

no auth allow-tagged enable

Command Default

By default, processing tagged packets is disabled.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables tagged packet processing.

Examples

The following example enables tagged packet processing on port 1/1/1.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# auth allow-tagged enable
```

History

Release version	Command history
08.0.80	This command was introduced.

auth auth-mode

Configures Flexible authentication mode at the interface level.

Syntax

auth auth-mode { **multiple-hosts** | **multiple-untagged** | **single-host** | **single-untagged** }

no auth auth-mode { **multiple-hosts** | **multiple-untagged** | **single-host** | **single-untagged** }

Command Default

The default Flexible authentication mode at the interface level is single-untagged.

Parameters

multiple-hosts
Configures the interface to operate in multiple-host authentication mode.

multiple-untagged
Configures the interface to operate in multiple-untagged authentication mode.

single-host
Configures the interface to operate in single-host authentication mode.

single-untagged
Configures the interface to operate in single-untagged authentication mode.

Modes

Interface configuration mode

Usage Guidelines

The **auth auth-mode** configuration on a port overrides the global **auth-mode** configuration for the device.

The **no** form of the command returns the interface to the default authentication mode.

Examples

The following example configures the Flexible authentication mode on port 1/1/1 as **multiple-hosts**.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# auth auth-mode multiple-hosts
```

History

Release version	Command history
08.0.80	This command was introduced.

auth-default-vlan

Specifies the auth-default VLAN globally.

Syntax

auth-default-vlan *vlan-id*

no auth-default-vlan *vlan-id*

Command Default

The auth-default VLAN is not specified.

Parameters

vlan-id

Specifies the VLAN ID of the auth-default VLAN.

Modes

Authentication configuration mode

Usage Guidelines

The auth-default VLAN must be configured to enable authentication.

A VLAN must be configured as auth-default VLAN to enable authentication. When any port is enabled for 802.1X authentication or MAC authentication, the client is moved to this VLAN by default.

The auth-default VLAN is also used in the following scenarios:

- When the RADIUS server does not return VLAN information upon authentication, the client is authenticated and remains in the auth-default VLAN.
- If RADIUS timeout happens during the first authentication attempt and the timeout action is configured as "Success", the client is authenticated in the auth-default VLAN. If the RADIUS server is not available during reauthentication of a previously authenticated client, the client is retained in the previously authenticated VLAN.

The **no** form of the command disables the auth-default VLAN.

Examples

The following example creates an auth-default VLAN with VLAN 2.

```
device(config)# authentication
device(config-authen)# auth-default-vlan 2
```

History

Release version	Command history
08.0.20	This command was introduced.

auth-fail-action (Flexible Authentication)

Configures, at a global level, the action taken after 802.1X and MAC authentication failure.

Syntax

auth-fail-action restricted-vlan [**voice voice-vlan**]

no auth-fail-action restricted-vlan [**voice voice-vlan**]

Command Default

The MAC address of the client is blocked in the hardware.

Parameters

restricted-vlan

Places the client in the restricted VLAN after authentication failure.

voice voice-vlan

Places the client in the voice VLAN after authentication failure.

Modes

Authentication configuration mode

Usage Guidelines

NOTE
The **auth-fail-action** command takes effect only when flexible authentication is enabled on the ports. Therefore, flexible authentication must be enabled on ports prior to configuring the authentication failure action. The authentication failure action must also be reconfigured after a change to the flexible authentication status of a port.

Before setting the authentication failure action to **restricted-vlan**, the restricted VLAN must be configured using the **restricted-vlan** command.

The authentication failure action can be configured globally or at the interface level. When both global and interface-level authentication failure actions are configured, the interface-level configuration takes precedence. Authentication failure action is configured at interface level by using the **authentication fail-action** command.

In single untagged mode, client ports that are placed in the RADIUS-specified VLAN upon successful authentication are not placed in the restricted VLAN when subsequent authentication fails. Instead, the non-authenticated client is blocked.

When voice VLAN is configured, clients are placed in the voice VLAN as a tagged member.

The **no** form of the command removes the authentication failure action configuration.

Examples

The following example configures using VLAN 4 as the restricted VLAN and then specifies placing the client in the restricted VLAN after authentication failure.

```
device(config)# authentication
device(config-authen)# restricted-vlan 4
device(config-authen)# auth-fail-action restricted-vlan
```

The following example specifies placing the client in the restricted VLAN and the voice VLAN after authentication failure.

```
device(config)# authentication
device(config-authen)# restricted-vlan 4
device(config-authen)# auth-fail-action restricted-vlan voice voice-vlan
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.61	This command was modified to support configuration of an authentication failure action for voice traffic.

auth-mode

Specifies the authentication mode, for example, as single-host, multiple, host, or multiple-untagged.

Syntax

auth-mode { **multiple-hosts** | **multiple-untagged** | **single-host** | **single-untagged** }

Command Default

By default, multiple-untagged is the authentication mode.

Parameters

multiple-hosts

Specifies that Flexible authentication operates in multiple host mode.

multiple-untagged

Specifies that Flexible authentication operates in multiple untagged mode.

single-host

Specifies that Flexible authentication operates in single host mode.

single-untagged

Configures the device to operate in single-untagged authentication mode.

Usage Guidelines

The **auth auth-mode** configuration on a port overrides the global **auth-mode** configuration for the device.

Modes

authentication configuration sub-mode

Examples

The following example configures Flexible authentication single host mode.

```
device# configure terminal
device(config)# authentication
device(config-authen)# single-host
```

History

Release version	Command history
08.0.80	This command was introduced.

auth-mode captive-portal

Authenticates the users in a VLAN through external Web Authentication (Captive Portal user authentication mode).

Syntax

auth-mode captive-portal

no auth-mode captive-portal

Command Default

External Web Authentication mode is not enabled by default.

Modes

Web Authentication configuration mode

Usage Guidelines

External Web Authentication uses RADIUS as the authentication method.

The **no** form of the command removes the external Web Authentication mode as the configured authentication mode.

Examples

The following example configures the authentication mode as external Web Authentication to authenticate the users in a VLAN.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode captive-portal
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 08.0.30j.

auth-mode none

Enables automatic Web Authentication.

Syntax

auth-mode none

no auth-mode none

Command Default

By default, if Web Authentication is enabled, hosts need to login and enter authentication credentials to gain access to the network.

Modes

Web Authentication configuration mode

Usage Guidelines

If a reauthentication period is configured, the host will be asked to re-enter authentication credentials once the reauthentication period ends.

You can configure Web Authentication to authenticate a host when the user clicks the **Login** button. When a host enters a valid URL address, Web Authentication checks the list of blocked MAC addresses. If the host's MAC address is not on the list and the number of allowable hosts has not been reached, after clicking the **Login** button, the host is automatically authenticated for the duration of the configured reauthentication period, if one is configured. Once the reauthentication period ends, the host is logged out and must enter the URL address again. If automatic authentication is enabled and a host address is not in the blocked MAC address list, Web Authentication authenticates the host and displays the Login page without user credentials, and then provides a hyperlink to the requested URL site.

> **NOTE**
> Automatic authentication is not the same as permanent authentication. You must still specify devices that are to be permanently authenticated even if automatic authentication is enabled.

Use the **show webauth vlan** command in VLAN configuration mode to determine if automatic authentication is enabled.

The **no** form of the command removes the automatic Web Authentication configuration.

Examples

The following example enables automatic Web Authentication.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode none
```

auth-mode passcode

Enables Web Authentication to use dynamically created passcodes to authenticate users in the VLAN.

Syntax

auth-mode passcode [**flush-expired** | **generate** | **grace-period** *time* | **length** *passcode-length* | **log** { **snmp-trap** | **syslog** } | **refresh-type** { **duration** *time* | **time** [*time-string* | **delete-all**] } | **resend-log** | **static**]

no auth-mode passcode [**flush-expired** | **generate** | **grace-period** *time* | **length** *passcode-length* | **log** { **snmp-trap** | **syslog** } | **refresh-type** { **duration** *time* | **time** [*time-string* | **delete-all**] } | **resend-log** | **static**]

Command Default

Passcode authentication is not enabled.

Parameters

flush-expired
Deletes old passcodes that have expired but are still valid because they are in the grace period.

generate
Refreshes the passcode instead of waiting for the system to automatically generate one.

grace-period *time*
Configures a grace period for an expired passcode.

length *passcode-length*
Configures the passcode length. Valid values are from 4 through 16 digits. The default is 4 digits.

log
Enables the generation of syslog messages and SNMP trap messages every time a new passcode is generated and passcode authentication is attempted. By default, the syslog and SNMP trap messages are enabled.

snmp-trap
Generates SNMP trap messages every time a new passcode is generated and passcode authentication is attempted.

syslog
Generates syslog messages every time a new passcode is generated and passcode authentication is attempted.

refresh-type
Configures the passcode refresh type as one of the following:

duration *time*
Configures the duration of time after which passcodes are refreshed. By default, dynamically created passcodes are refreshed every 1440 minutes (24 hours).

time *time-string*
Configures the time of the day when the passcode should be refreshed. When initially enabled, the time of day method will cause passcodes to be refreshed at 00:00 (12:00 midnight). You can add up to 24 refresh periods in a 24-hour period.

delete-all
Deletes all of the configured passcode refresh times and reverts back to the default time of 00:00 (12:00 midnight).

resend-log

Retransmits the current passcode to a syslog message or SNMP trap if passcode logging is enabled.

static

Creates a static passcode.

Modes

Web Authentication configuration mode

Usage Guidelines

You can delete old passcodes that have expired but are still valid because they are in the grace period using the **auth-mode passcode flush-expired** command. This is useful in situations where the old passcodes have been compromised but are still valid because of the grace period. This command does not affect current valid passcodes or passcodes that newly expire.

When manually refreshed using the **auth-mode passcode generate** command, the old passcode will no longer work, even if a grace period is configured. Also, if the passcode refresh method duration of time is used, the duration counter is reset when the passcode is manually refreshed. The passcode refresh method time of day is not affected when the passcode is manually refreshed.

If the grace period is reconfigured using the **auth-mode passcode grace-period** command while a passcode is already in the grace period, the passcode is not affected by the configuration change. The new grace period will apply only to passcodes that expire after the new grace period is set.

If you change the passcode refresh value using the **auth-mode passcode refresh-type**, the configuration is immediately applied to the current passcode. If both the duration of time and time of day passcode refresh values are configured, they are saved to the configuration file. You can switch back and forth between the passcode refresh methods, but only one method can be enabled at a time.

Passcodes are not stateful, meaning a software reset or reload will cause the system to erase the passcode. When the device comes back up, a new passcode will be generated.

When the **auth-mode passcode resend-log** command is configured, the switch retransmits the current passcode only. Passcodes that are in the grace period are not sent.

Static passcodes can be used for troubleshooting purposes, or for networks that want to use passcode authentication, but do not have the ability to support automatically generated passcodes (for example, the network does not fully support the use of SNMP traps or syslog messages with passcodes). Manually created passcodes are used in conjunction with dynamic passcodes . You can configure up to four static passcodes that never expire. Unlike dynamically created passcodes, static passcodes are saved to flash memory. By default, there are no static passcodes configured on the switch. Static passcodes do not have to be the same length as passcodes that are automatically generated.

Use the **show webauth vlan** *vlan-id* **passcode** command to view the current passcodes.

The **no** form of the command removes or disables the configured settings.

Examples

The following example flushes out all expired passcodes that are currently in the grace period.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode flush-expired
```

The following example refreshes the passcode immediately.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode generate
```

The following example configures the grace period for an expired passcode.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode grace-period 5
```

The following example increases the passcode length to 10 digits.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode length 10
```

The following example shows how to re-enable syslog messages for passcodes after they have been disabled.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode log syslog
```

The following example changes the duration of time after which passcodes are refreshed to 4320 minutes (72 hours).

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode refresh-type duration 4320
```

The following example configures the switch to refresh passcodes at a certain time of day.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode refresh-type time 14:30
```

The following example deletes all of the configured passcode refresh times and reverts back to the default time of 00:00 (12:00 midnight).

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode refresh-type time delete-all
```

The following example retransmits the current passcode to a syslog message or SNMP trap if passcode logging is enabled.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode resend-log
```

The following example creates static passcodes.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode passcode static 3267345
```

auth-mode username-password

Enables the username and password Web Authentication mode.

Syntax

auth-mode username-password [**auth-methods** {**radius** [**local**] | **local** [**radius**] } | **local-user-database** *database-name*]

no auth-mode username-password [**auth-methods** {**radius** [**local**] | **local** [**radius**] } | **local-user-database** *database-name*]

Command Default

Username password authentication is not enabled.

Parameters

auth-methods
Configures the authentication method.

radius
Uses the RADIUS server to authenticate.

local
Uses the local user database to authenticate.

local-user-database *database-name*
Uses the usernames and passwords in the specified database to authenticate.

Modes

Web Authentication configuration mode

Usage Guidelines

You can optionally specify a failover sequence for RADIUS and local user database authentication methods. For example, you can configure Web Authentication to first use a local user database to authenticate users in a VLAN. If the local user database is not available, it will use a RADIUS server. You can specify the **local** and **radius** options one after the other in the required sequence to configure the failover sequence.

The **no** form of the command removes the username password authentication.

Examples

The following example uses a local user database to authenticate users in a VLAN.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode username-password auth-methods local
```

The following example uses the usernames and passwords in the specified database to authenticate.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode username-password local-user-database
```

The following example configures a failover sequence for RADIUS and local user database authentication methods. In this example, Web Authentication first uses a local user database to authenticate users in a VLAN. If the local user database is not available, it will use a RADIUS server.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# auth-mode username-password auth-methods local radius
```

auth-order

Specifies the sequence of authentication methods, 802.1X authentication and MAC authentication at the global level.

Syntax

auth-order {**dot1x mac-auth** | **mac-auth dot1x** }

no auth-order {**dot1x mac-auth** | **mac-auth dot1x** }

Command Default

The authentication sequence is set to perform 802.1X authentication method followed by MAC authentication.

Parameters

dot1x mac-auth
Specifies 802.1X authentication followed by MAC authentication as the order of authentication methods on the interface.

mac-auth dot1x
Specifies MAC authentication followed by 802.1X authentication as the order of authentication methods on the interface.

Modes

Authentication configuration mode

Usage Guidelines

If 802.1X authentication and MAC authentication methods are enabled on the same port, by default the authentication sequence is set to perform 802.1X authentication followed by MAC authentication.

For authentication order 802.1X authentication followed by MAC authentication: When 802.1X authentication succeeds, the client is authenticated and the policies returned by the RADIUS server are applied. MAC authentication is not performed in this case. If 802.1X authentication fails, the failure action is carried out and MAC authentication is not attempted. On the other hand, if the client does not respond to 802.1X messages, then MAC authentication is attempted. Upon successful MAC authentication, the client is authenticated and the policies returned by the RADIUS server are applied and on authentication failure, the configured failure action is applied.

For authentication order MAC authentication followed by 802.1X authentication: By default, 802.1X authentication is performed even if MAC authentication is successful. Upon successful 802.1X authentication, the client is authenticated and the policies returned by the RADIUS server are applied and on authentication failure, the configured failure action is applied. The default behavior can be changed by specifying the RADIUS attribute, to prevent the 802.1X authentication from being performed after successful MAC authentication. In this case, the client is authenticated and the policies returned by the RADIUS server are applied after successful MAC authentication. If MAC authentication method fails, 802.1X port security authentication is not attempted and the configured failure action is applied. However, if the **mac-authentication dot1x-override** command is configured, the clients that failed MAC authentication undergoes 802.1X authentication if the failure action is configured as restricted VLAN. If 802.1X authentication is successful, the policies returned by the RADIUS server are applied to the port.

The **no** form of the command disables the authentication order functionality.

Examples

The following example specifies 802.1X authentication followed by MAC authentication as the order of authentication methods at the global level.

```
device(config)# authentication
device(config-authen)# auth-order dot1x mac-auth
```

The following example specifies MAC authentication followed by 802.1X authentication as the order of authentication methods at the global level.

```
device(config)# authentication
device(config-authen)# auth-order mac-auth dot1x
```

History

Release version	Command history
08.0.20	This command was introduced.

auth-timeout-action

Configures, at a global level, the action taken when external server authentication times out.

Syntax

auth-timeout-action { **critical-vlan** [**voice voice-vlan**] | **failure** | **success** }

no auth-timeout-action { **critical-vlan** [**voice voice-vlan**] | **failure** | **success** }

Command Default

Authentication timeout action is not configured at a global level.

Parameters

critical-vlan

Places the client in the critical VLAN after RADIUS timeout.

voice voice-vlan

Places the client in the voice VLAN after RADIUS timeout.

failure

Specifies that RADIUS timeout causes authentication failure.

success

Specifies that RADIUS timeout causes authentication success.

Modes

Authentication configuration mode

Usage Guidelines

NOTE
The **auth-timeout-action** command takes effect only when flexible authentication is enabled on the ports. Therefore, flexible authentication must be enabled on ports prior to configuring the RADIUS timeout action. The RADIUS timeout action must also be reconfigured after a change to the flexible authentication status of a port.

The **auth-timeout-action** command configures the RADIUS timeout action at a global level.

The **success** option triggers authentication success and the client is placed in the previously-authenticated VLAN. In the case of first time authentication, the client is placed in the default voice VLAN.

The **failure** option causes authentication failure and results in the execution of the authentication failure action. The authentication failure action is configured at a global level by using the **auth-fail-action** command and at the local interface level by using the **authentication** command.

RADIUS timeout action can also be configured at the port level by using the **authentication timeout-action** command. When authentication timeout actions are configured at both global and local port level, the port-level configuration takes precedence.

The **no** form of the command removes the authentication timeout action configuration.

Examples

The following example specifies placing the client in the critical VLAN and the voice VLAN (for voice traffic) after RADIUS authentication timeout.

```
device# configure terminal
device(config)# authentication
device(config-authen)# auth-timeout-action critical-vlan voice voice-vlan
```

History

Release version	Command history
08.0.61	This command was introduced.

auth-vlan-mode

Enables the Flexible authentication-enabled ports to be member of multiple untagged VLANs.

Syntax

auth-vlan-mode { **multiple-untagged** }

no auth-vlan-mode { **multiple-untagged** }

Command Default

Flexible authentication-enabled port can be member of only one untagged VLAN.

Parameters

multiple-untagged

Allows the client to be assigned to multiple untagged VLANs on authentication.

Modes

Authentication configuration mode

Usage Guidelines

Reload is not required to change the VLAN mode. If the command is applied globally, all sessions will be cleared on all interfaces that have Flexible authentication enabled. However, existing sessions will be cleared if the command is applied on an individual interface using the **authentication auth-vlan-mode** command from the interface configuration mode.

Single untagged mode is only applicable to untagged VLANs returned by RADIUS.

The **no** form of the command returns the VLAN mode to single untagged. Port can be assigned to only one untagged VLAN on authentication.

Examples

The following example configures multiple untagged VLAN at the global level.

```
device# configure terminal
device(config)# authentication
device(config-authen)# auth-vlan-mode multiple-untagged
```

The following example clears all sessions on interfaces with Flexible authentication enabled and restores the single untagged VLAN mode default on all new sessions established on those interfaces.

```
device# configure terminal
device(config)# authentication
device(config-authen)# no auth-vlan-mode multiple-untagged
```

History

Release version	Command history
08.0.30b	This command was introduced.

authenticate

Enables Network Time Protocol (NTP) strict authentication.

Syntax

authenticate

no authenticate

Command Default

Authentication is disabled.

Modes

NTP configuration mode

Usage Guidelines

If authentication is enabled, NTP packets that do not have a valid MAC address are dropped.

The **no** form of the command disables NTP strict authentication.

Examples

The following example enables NTP strict authentication.

```
device(config)# ntp
device(config-ntp)# authenticate
```

authenticated-mac-age-time

Configures the time duration after which the user-associated MAC address is aged out and reauthentication is enforced.

Syntax

authenticated-mac-age-time *time*

no authenticated-mac-age-time *time*

Command Default

The default time is 3600 seconds.

Parameters

time

Specifies the time duration after which the user-associated MAC address is aged out and reauthentication is enforced. Valid values are 0 seconds to the reauthentication time configured using the **reauth-time** command. The default value is 3600 seconds.

Modes

Web Authentication configuration mode

Usage Guidelines

You can force Web Authenticated hosts to be reauthenticated if they have been inactive for a period of time. The inactive duration is calculated by adding the **mac-age-time** that has been configured for the device and the configured **authenticated-mac-age-time**. The **mac-age-time** command defines how long a port address remains active in the address table. If the authenticated host is inactive for the sum of these two values, the host is forced to be reauthenticated.

The **no** form of the command sets the time to the default of 3600 seconds.

Examples

The following example configures the time duration after which the user-associated MAC addressed is aged out and reauthentication is enforced.

```
device(config)# mac-age-time 600
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# reauth-time 303
device(config-vlan-10-webauth)# authenticated-mac-age-time 300
```

authentication

Enters the authentication mode.

Syntax

authentication

no authentication

Command Default

Authentication mode is not enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command will disable the authentication functionality.

Use this command to enter the authentication mode from global configuration mode. After entering authentication mode, you can configure additional authentication functionality that applies globally. Authentication functionality is also available for configuration at the interface configuration mode using different commands that apply only to the specified interface.

Examples

The following example enables authentication.

```
device(config)#authentication
device(config-authen)#
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication (IKEv2)

Configures an authentication proposal for an Internet Key Exchange version 2 (IKEv2) profile.

Syntax

authentication *authentication-proposal-name*

no authentication *authentication-proposal-name*

Command Default

The default authentication proposal is def-ike-auth-prop.

Parameters

authentication-proposal-name

Specifies the name of an authentication proposal.

Modes

IKEv2 profile configuration mode

Usage Guidelines

When an IKEv2 profile is created, it uses the default authentication proposal (def-ike-auth-prop). The def-ike-auth-prop proposal has the following settings:

- Method for local device authentication: pre_shared
- Method for local device authentication: pre_shared
- Pre-shared key: $QG5HTT1Ebk1TVW5NLWIhVW5ATVMhLS0rc1VA

Use this command to configure an alternate authentication proposal for the IKEv2 profile.

The **no** form of the command restores the default configuration.

Examples

The following example shows how to configure an authentication proposal named auth_test1 for an IKEv2 profile named ikev2_profile.

```
device# configure terminal
device(config)# ikev2 profile ikev2_profile
device(config-ikev2-profile-ikev2_profile)# authentication auth_test1
```

History

Release version	Command history
08.0.50	This command was introduced.

authentication auth-default-vlan

Specifies the authentication default VLAN at the interface level.

Syntax

authentication auth-default-vlan *vlan-id*

no authentication auth-default-vlan *vlan-id*

Command Default

The auth-default VLAN is not specified.

Parameters

vlan-id

Specifies the VLAN ID of the auth-default VLAN.

Modes

Interface configuration mode

Usage Guidelines

The auth-default VLAN specified at the interface level overrides the auth-default VLAN configured using the **auth-default-vlan** command at the global level. The configured auth-default VLAN configured at the global level will still be applicable to other ports that don't have auth-default VLAN configured at the interface level.

The local auth-default VLAN must be configured to enable authentication.

A VLAN must be configured as auth-default VLAN to enable authentication. When any port is enabled for 802.1X authentication or MAC authentication, the client is moved to this VLAN by default.

The auth-default VLAN is also used in the following scenarios:

- When the RADIUS server does not return VLAN information upon authentication, the client is authenticated and remains in the auth-default VLAN.
- If RADIUS timeout happens during the first authentication attempt and the timeout action is configured as "Success", the client is authenticated in the auth-default VLAN. If the RADIUS server is not available during reauthentication of a previously authenticated client, the client is retained in the previously authenticated VLAN.

The **no** form of the command disables the auth-default VLAN.

Examples

The following example creates a default VLAN with VLAN 3.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication auth-default-vlan 3
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication auth-order

Specifies the sequence of authentication methods, 802.1X authentication and MAC authentication, on a specific interface.

Syntax

authentication auth-order {**dot1x mac-auth** | **mac-auth dot1x** }

no authentication auth-order {**dot1x mac-auth** | **mac-auth dot1x** }

Command Default

The authentication sequence is set to perform 802.1X authentication method followed by MAC authentication.

Parameters

dot1x mac-auth

Specifies 802.1X authentication followed by MAC authentication as the order of authentication methods on the interface.

mac-auth dot1x

Specifies MAC authentication followed by 802.1X authentication as the order of authentication methods on the interface.

Modes

Interface configuration mode

Usage Guidelines

If 802.1X authentication and MAC authentication methods are enabled on the same port, by default the authentication sequence is set to perform 802.1X authentication followed by MAC authentication.

Configuring the authentication order at the interface level overrides the configuration at the global level for that particular interface. The configured global authentication order will still be applicable to other ports that don't have a per port authentication order configured.

For authentication order 802.1X authentication followed by MAC authentication: When 802.1X authentication succeeds, the client is authenticated and the policies returned by the RADIUS server are applied. MAC authentication is not performed in this case. If 802.1X authentication fails, the failure action is carried out and MAC authentication is not attempted. On the other hand, if the client does not respond to dot1x messages, then MAC authentication is attempted. Upon successful MAC authentication, the client is authenticated and the policies returned by the RADIUS server are applied and on authentication failure, the configured failure action is applied.

For authentication order MAC authentication followed by 802.1X authentication: By default, 802.1X authentication is performed even if MAC authentication is successful. Upon successful 802.1X authentication, the client is authenticated and the policies returned by the RADIUS server are applied and on authentication failure, the configured failure action is applied. The default behavior can be changed by specifying the RADIUS attribute, to prevent the 802.1X authentication from being performed after successful MAC authentication. In this case, the client is authenticated and the policies returned by the RADIUS server are applied after successful MAC authentication. If MAC authentication method fails, 802.1X port security authentication is not attempted and the configured failure action is applied. However, if the **mac-authentication dot1x-override** command is configured, the clients that failed MAC authentication undergoes 802.1X authentication if the failure action is configured as restricted VLAN. If 802.1X authentication is successful, the policies returned by the RADIUS server are applied to the port.

The **no** form of the command disables the authentication order functionality.

Examples

The following example specifies 802.1X authentication followed by MAC authentication as the order of authentication methods on Ethernet interface 1/1/3.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/3
device(config-if-e1/1/3)# authentication auth-order dot1x mac-auth
```

The following example specifies MAC authentication followed by 802.1X authentication as the order of authentication methods on Ethernet interface 1/1/3.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/3
device(config-if-e1/1/3)# authentication auth-order mac-auth dot1x
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication auth-vlan-mode

Enables multiple-untagged mode on a specific Flexible authentication-enabled port and allows it to be member of multiple untagged VLANs.

Syntax

authentication auth-vlan-mode { **multiple-untagged** }

no authentication auth-vlan-mode { **multiple-untagged** }

Command Default

Flexible authentication-enabled port can be member of only one untagged VLAN.

Parameters

multiple-untagged

Allows the client to be assigned to multiple untagged VLANs on authentication.

Modes

Interface configuration mode

Usage Guidelines

Reload is not required to change the VLAN mode. However, existing sessions will be cleared if the command is applied to an individual interface.

The VLAN mode specified at the interface level overrides the VLAN mode configured using the **auth-vlan-mode** command at the global level. The configured VLAN mode configured at the global level will still be applicable to other ports that don't have the VLAN mode configured at the interface level.

Single untagged mode is only applicable to untagged VLANs returned by RADIUS.

The **no** form of the command returns the VLAN mode to single untagged. Port can be assigned to only one untagged VLAN on authentication.

Examples

The following example configures multiple untagged VLAN mode on interface 1/1/1.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
(config-if-e1000-1/1/1)# authentication auth-vlan-mode multiple-untagged
```

The following example clears all sessions on a Flexible authentication enabled interface and restores the single untagged VLAN mode.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
(config-if-e1000-1/1/1)# no authentication auth-vlan-mode multiple-untagged
```

History

Release version	Command history
08.0.30b	This command was introduced.

authentication disable-aging

Disables aging of MAC sessions at the interface level.

Syntax

authentication disable-aging { **permitted-mac-only** | **denied-mac-only** }

no authentication disable-aging { **permitted-mac-only** | **denied-mac-only** }

Command Default

Aging of MAC sessions is not disabled.

Parameters

permitted-mac-only

Prevents permitted (authenticated and restricted) sessions from being aged out and ages denied sessions.

denied-mac-only

Prevents denied sessions from being aged out, but ages out permitted sessions.

Modes

Interface configuration mode

Usage Guidelines

Use this command to disable the aging of MAC sessions. Use the **authentication disable-aging** command at the interface level and the **disable-aging** command in the authentication configuration mode. Entered at the interface level, this command overrides the command entered at the authentication global level. However, the global configuration to disable aging of MAC sessions will still be applicable to other ports that don't have configuration at the interface level.

The **no** form of the command does not disable aging.

Examples

The following example disables aging for permitted MAC addresses.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication disable-aging permitted-mac-only
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication dos-protection

Enables denial of service (DoS) authentication protection on the interface.

Syntax

authentication dos-protection { **enable** | **mac-limit** *mac-limit-value* }

no authentication dos-protection { **enable** | **mac-limit** *mac-limit-value* }

Command Default

Denial of service is disabled by default.

Parameters

enable

Specifies to enable DoS protection.

mac-limit

Specifies the maximum number MAC-authentication attempts allowed per second.

mac-limit-value

Specifies the rate limit for DoS protection. You can specify a rate from 1 - 65535 authentication attempts per second. The default is a rate of 512 authentication attempts per second.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables DoS protection.

To limit the susceptibility of the ICX device to DoS attacks, you can configure the device to use multiple RADIUS servers, which can share the load when there are a large number of MAC addresses that need to be authenticated. The ICX device can run a maximum of 10 RADIUS clients per server and will attempt to authenticate with a new RADIUS server if current one times out.

In addition, you can configure the ICX device to limit the rate of authentication attempts sent to the RADIUS server. When MAC authentication is enabled, the number of RADIUS authentication attempts made per second is tracked. When you also enable the DoS protection feature, if the number of RADIUS authentication attempts for MAC addresses learned on an interface per second exceeds a configurable rate (by default 512 authentication attempts per second), the device considers this a possible DoS attack and disables the port. You must then manually re-enable the port.

Examples

The example specifies the DoS protection count as 256.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# authentication dos-protection mac-limit 256
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication fail-action

Specifies the authentication failure action to move the client port to the restricted VLAN after authentication failure for both MAC authentication and 802.1X authentication on an interface.

Syntax

authentication fail-action restricted-vlan *vlan-id*

no authentication fail-action restricted-vlan

Command Default

The default action is to block the MAC address of the client.

Parameters

restricted-vlan

Specifies the failure action to move the client port to the restricted VLAN after authentication failure.

vlan-id

Specifies the ID of the VLAN to be configured as restricted VLAN.

Modes

Interface configuration mode

Usage Guidelines

If the authentication failure action is not configured, the client's MAC address is blocked in the hardware (default action) when the authentication fails.

The restricted VLAN specified at the interface level overrides the restricted VLAN configured using the **restricted-vlan** command at the global level. The configured restricted VLAN configured at the global level will still be applicable to other ports that don't have restricted VLAN configured at the interface level.

The client ports that were placed in the RADIUS-specified VLAN upon successful authentication are not placed in the restricted VLAN if the subsequent authentication fails. Instead, the non-authenticated client is blocked.

The **no** form of the command disables the authentication failure action.

Examples

The following example specifies authentication failure action to move the client port to the restricted VLAN (VLAN 4 is configured as restricted VLAN) after authentication failure.

```
device(config)# authentication
device(config-authen)# restricted-vlan 4
device(config-authen)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication fail-action restricted-vlan 5
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication filter

Applies an 802.1X authentication override filter to permit or deny traffic from a specified MAC address or set of MAC addresses.

Syntax

authentication filter { **permit** | **deny** } { *MAC_address address_mask vlan_id* }

no authentication filter { **permit** | **deny** } { *MAC_address address_mask vlan_id* }

Command Default

By default, on an interface with Flexible authentication configured, 802.1x authentication is applied.

Parameters

{ **permit** | **deny** }

Determines whether the MAC address provided in the filter statement is allowed or dropped.

MAC_address address_mask

Specifies the MAC address (in the form HHHH.HHHH.HHHH) followed by a mask (in the form xxxx.xxxx.xxxx, where x is "0" or "f") to be matched in the filter statement.

vlan_id

Specifies the VLAN number in which the 802.1X authentication override is allowed.

Modes

Interface configuration sub-mode

Usage Guidelines

The **no** form of the command removes the 802.1X authentication override filter.

Examples

The following example configures 802.1X authentication override on port 1/1/3 for all traffic from MAC source address 001.1234.1234 in VLAN 10.

```
device# configure terminal
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# authentication filter permit 0001.1234.1234 ffff.ffff.ffff 10
device(config-if-e1000-1/1/3)# exit
device(config)#
```

History

Release version	Command history
08.0.95	This command was introduced.

authentication filter-strict-security

Enables or disables strict filter security for 802.1X and MAC-authentication enabled interfaces.

Syntax

authentication filter-strict-security

no authentication filter-strict-security

Command Default

Strict filter security is enabled.

Modes

Interface configuration mode

Usage Guidelines

When strict security mode is enabled, authentication for a port fails if the Filter-Id attribute contains invalid information, or if insufficient system resources are available to implement the IP ACLs.

When strict security mode is enabled:

- If the Filter-Id attribute in the Access-Accept message contains a value that does not refer to an existing filter (that is, IP ACL configured on the device), then the client will not be authorized, regardless of any other information in the message (for example, if the Tunnel-Private-Group-ID attribute specifies a VLAN on which to assign the port).
- If the device does not have the system resources available to dynamically apply a filter to a port, then the client will not be authenticated.

When strict filter security is disabled:

- If the Filter-Id attribute in the Access-Accept message contains a value that does not refer to an existing filter (that is, a MAC address filter or IP ACL configured on the device), then the client remains authorized and no filter is dynamically applied to it.
- By default, strict security mode is enabled for all MAC authentication and 802.1X-enabled interfaces, but you can manually disable or enable it using the **filter-strict-security** command from the authentication configuration mode or using the **authentication filter-strict-security** command from the interface configuration mode.

The **no** form of the command disables strict filter security.

Examples

The following example enables strict filter security.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication filter-strict-security
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.30mb	This command was modified.

authentication max-sessions

Specifies the maximum number of MAC sessions that can be authenticated per device or per port for MAC authentication and 802.1X authentication.

Syntax

authentication max-sessions*count*

no authentication max-sessions*count*

Command Default

The default number of MAC sessions that can be authenticated on a single interface is 2.

Parameters

count

Specifies the maximum number of authenticated MAC sessions.

Modes

Interface configuration mode

Usage Guidelines

The maximum number of authenticated MAC sessions on an interface depends on the ICX device and dynamic ACL assignments.

If RADIUS assigns dynamic ACL to at least one client on the interface, the maximum number of MAC sessions that can be authenticated is limited to 32 in all ICX devices.

If dynamic ACL is not assigned to any of the clients on the interface, the maximum number of MAC addresses that can be authenticated varies depending on the ICX device as specified in Table 6.

System reload is not required for the changes to take effect. However, existing sessions are cleared for the changes to take effect.

TABLE 6 Maximum Number of Authenticated MAC Sessions per Port on Various Platforms

Supported platforms	Maximum number of MAC sessions per port when none of the Clients has dynamic ACL	Maximum number of MAC sessions per port when at least one User has Dynamic ACL
ICX 7650	1024	32
ICX 8200	1024	

The system limit for authenticated MAC sessions also varies and depends on the ICX device and dynamic ACL assignments.

TABLE 7 Maximum Number of Authenticated MAC Sessions per System (Standalone or Stack) for RUCKUS ICX 7650 devices

Supported platforms	Maximum number of MAC sessions per system when none of the clients has dynamic ACL	Maximum number of MAC sessions per system when at least one client has dynamic ACL
ICX 7650	1536	512
ICX 8200	1536	512

The **no** form of the command reinstates the maximum authenticated MAC sessions allowed per port to the default value of 2.

Examples

The following example specifies the maximum number of authenticated MAC sessions for port 1/1/1.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication max-sessions 30
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.

authentication reauth-timeout

Sets the time to wait before reauthenticating a client that has timed out and a timeout action has been applied. This command is applicable for MAC authentication and 802.1X authentication.

Syntax

authentication reauth-timeout *seconds*

no authentication reauth-timeout *seconds*

Command Default

The default re-authentication timeout is 300 seconds.

Parameters

seconds

Sets the re-authentication timeout in seconds. The range is from 60 to 4294967295.

Modes

Authentication configuration sub-mode

Usage Guidelines

The **no** form of the command returns the timeout to its default value, 300 seconds.

This command sets the re-authentication timeout after a client times out, for example, when the RADIUS server is not reachable, and the client is placed in the critical, restricted, or auth-default VLAN or in the BLOCKED state (VLAN 4092). The switch continues checking for server availability based on the reauthentication-timeout interval.

NOTE
If the timeout action is "failure" and no restricted VLAN is configured, a session is moved to the BLOCKED state.

Examples

The example specifies a re-authentication timeout of 120 seconds.

```
device(config)# authentication
device(config-authen)# authentication reauth-timeout 120
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.61	This command was modified to increase the default timeout from 60 to 300.

authentication source-guard-protection enable

Enables Source Guard Protection along with authentication on a specified interface.

Syntax

authentication source-guard-protection enable

no authentication source-guard-protection enable

Command Default

Source Guard Protection is not enabled.

Modes

Interface configuration mode

Usage Guidelines

When a new Flexible authentication session begins on a port that has Source Guard Protection enabled, the session either applies a dynamically created Source Guard ACL entry or it uses the dynamic IP ACL assigned by the RADIUS server. If a dynamic IP ACL is not assigned, the session uses the Source Guard ACL entry. The Source Guard ACL entry is **permit ip***secure-ip***any**, where *secure-ip* is obtained from the ARP Inspection table or from the DHCP Secure table. The DHCP Secure table is comprised of DHCP Snooping and Static ARP Inspection entries. The Source Guard ACL permit entry is added to the hardware table after all of the following events occur:

- The MAC address is authenticated
- The IP address is learned
- The MAC-to-IP mapping is checked against the Static ARP Inspection table or the DHCP Secure table

NOTE
In Flexible authentication, IP Source guard is applicable only for IPv4 traffic.

The Source Guard ACL entry is not written to the running configuration file. However, you can view the configuration using the **show mac-authentication sessions** command at the global level or for a specific interface.

NOTE
The secure MAC-to-IP mapping is assigned at the time of authentication and remains in effect as long as the session is active. The existing session doesn't get affected if the DHCP Secure table is updated after the session is authenticated and while the session is still active.

The Source Guard ACL permit entry is removed when the session expires or is cleared.

The **no** form of the command disables source guard protection.

Examples

The following example enables source guard protection on an interface.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication source-guard-protection enable
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.40a	IP Source guard was supported for 802.1X authentication-enabled port.

authentication timeout-action

Configures the authentication timeout actions to specify the action for the RADIUS server if an authentication timeout occurs.

Syntax

authentication timeout-action { **success** | **failure** | **critical-vlan** }

no authentication timeout-action { **success** | **failure** | **critical-vlan** *vlan-id* }

Command Default

The default authentication timeout action is failure.

Parameters

success

Considers the client as authenticated after RADIUS timeout. After the timeout action is enabled as success, use the **no** form of the command to set the RADIUS timeout behavior to retry.

failure

Specifies the RADIUS timeout action to carry out the configured failure action. If the failure action is not configured, the client's MAC address is blocked in the hardware. Once the failure timeout action is enabled, use the **no** form of the command to reset the RADIUS timeout behavior to retry.

critical-vlan

On initial authentication, specifies that the client be moved to the client to the designated critical VLAN after authentication timeout. This command applies only to data traffic.

vlan-id

Specifies the ID of the VLAN to be configured as critical VLAN.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command will disable this functionality.

If the timeout is configured as success, client will be authenticated in the auth-default VLAN.

If the authentication failure action is configured as restricted VLAN using the **authentication fail-action** command, the client is placed in the restricted VLAN. A restricted VLAN must be configured using the **restricted-vlan** command at the global level or using the **authentication fail-action restricted-vlan** command at the interface level.

The critical VLAN specified at the interface level overrides the critical VLAN configured using the **critical-vlan** command at the global level. The configured critical VLAN configured at the global level will still be applicable to other ports that don't have critical VLAN configured at the interface level.

Examples

The following example sets the **authentication timeout-action** command to success.

```
device(config)# authentication
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# authentication timeout-action success
```

History

Release version	Command history
08.0.20	This command was introduced.

authentication voice-vlan

Creates a voice VLAN ID for a port or for a group of ports.

Syntax

authentication voice-vlan *num*

no authentication voice-vlan *num*

Command Default

A local or port-level voice VLAN ID is not configured.

Parameters

num

Specifies a valid VLAN ID. Valid values range from 1 through 4095.

Modes

Interface configuration mode

Usage Guidelines

When a local voice VLAN is configured, it facilitates continuing operation of IP phones in the following scenarios:

- The authentication process does not return a client VLAN.
- The RADIUS server is not reachable.
- Phone authentication fails.

The local voice VLAN configuration overrides the global voice VLAN configuration.

When a local voice VLAN is not configured or the local voice VLAN configuration is removed, the global VLAN configuration takes effect.

When you configure a voice VLAN ID on the port to which the VoIP phone is connected, the device automatically detects and reconfigures the VoIP phone when it is physically moved from one port to another within the same device.

When the ICX device receives the VoIP phone query, it sends the voice VLAN ID in a reply packet to the VoIP phone. The VoIP phone then configures itself within the voice VLAN.

As long as the port to which the VoIP phone is connected has a voice VLAN ID, the phone will configure itself into that voice VLAN. If you change the voice VLAN ID, the software will immediately send the new ID to the VoIP phone, and the VoIP phone will reconfigure itself with the new voice VLAN.

Some VoIP phones may require a reboot after configuring or reconfiguring a voice VLAN ID.

The **no** form of the command removes the voice VLAN ID from the port.

Examples

The following example creates a VLAN ID for a port.

```
device(config)# interface ethernet 2/1/1
device(config-if-e1000-2/1/1)# authentication voice-vlan 1001
```

The following example creates a VLAN ID for a group of ports.

```
device(config)# interface ethernet 1/1/2 to 1/1/10
device(config-if-e1000-1/1/2-1/1/10)# authentication voice-vlan 1005
```

History

Release version	Command history
08.0.61	This command was introduced.

authentication-algorithm

Specifies the cryptographic algorithm to be used for the key in the keychain.

Syntax

authentication-algorithm { **hmac-sha-1** | **hmac-sha-256** | **md5** | **sha-1** | **sha-256** }

no authentication-algorithm { **hmac-sha-1** | **hmac-sha-256** | **md5** | **sha-1** | **sha-256** }

Command Default

An authentication algorithm is not specified by default.

Parameters

hmac-sha-1
Sets the authentication algorithm to HMAC-SHA-1.

hmac-sha-256
Sets the authentication algorithm to HMAC-SHA-256.

md5
Sets the authentication algorithm to MD5.

sha-1
Sets the authentication algorithm to SHA-1.

sha-256
Sets the authentication algorithm to SHA-256.

Modes

Key ID configuration mode

Usage Guidelines

The application or protocol chooses the cryptographic algorithm that matches its criteria.

A key is considered valid only if the key has not expired, and the password and authentication algorithm have been specified.

The **no** form of the command removes the authentication algorithm from the key.

Examples

The following example specifies MD5 to be used as the authentication algorithm.

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)# key-id 10
device(config-keychain-xprotocol-key-10)# authentication-algorithm md5
```

History

Release version	Command history
08.0.70	This command was introduced.

authentication-algorithm (MKA)

Specifies the cryptographic algorithm to be used for the specified key in the MKA (MACsec) keychain.

Syntax

authentication-algorithm { **aes-128-cmac** | **aes-256-cmac** }

no authentication-algorithm { **aes-128-cmac** | **aes-256-cmac** }

Command Default

An authentication algorithm is not specified by default.

Parameters

aes-128-cmac

Sets the authentication algorithm to AES-128-CMAC.

aes-256-cmac

Sets the authentication algorithm to AES-256-CMAC.

Modes

MKA Key ID configuration mode

Usage Guidelines

The **no** form of the command removes the authentication algorithm from the key.

A key is considered valid only if the key has not expired and the password and authentication algorithm have been specified.

Examples

The following example configures the MKA keychain "fi-msec" to use key-10, which uses the authentication algorithm AES-128-CMAC. It then enables MACsec on interface 2/1/23 and applies the predefined MKA configuration group 4 and the MKA keychain "fi-msec" to the interface.

```
device# configure terminal
device(config)# keychain fi-msec mka
device(config-keychain-fi-msec)#key-id key-10
device(config-keychain-fi-msec-key-10)# password 2 $ITJkQG4hMmRAbiEyZEBuITJkQG5aWlpaWlpaWlpaWlo=
device(config-keychain-fi-msec-key-10)# authentication-algorithm aes-128-cmac <---
device(config-keychain-fi-msec-key-10)# send-lifetime start 11-10-2021 08:12:30 end 3600
device(config-keychain-fi-msec-key-10)# end

device# configure terminal
device(config)# enable-mka ethernet 2/1/23
device(config-dot1x-mka-2/1/23)# mka-cfg-group 4
device(config-dot1x-mka-2/1/23)# mka-key-chain fi-msec <----
device(config-dot1x-mka-2/1/23)# end
device#
```

History

Release version	Command history
09.0.10b	This command was introduced.

authentication-key

Defines an authentication key for Network Time Protocol (NTP).

Syntax

authentication-key key-id *key-id* { **md5** | **sha1** } *key-string*

no authentication-key key-id *key-id* [**md5** | **sha1**] *key-string*

Command Default

Authentication keys are not configured.

Parameters

key-id *key-id*

Specifies a valid key ID. The value can range from 1 through 65535.

md5

Message authentication support is provided using the Message Digest 5 algorithm.

sha1

The SHA1 keyed hash algorithm is used for NTP authentication.

key-string

The value of the MD5 or SHA1 key. The length of the key string may be up to 16 characters. Up to 32 keys may be defined.

Modes

NTP configuration mode

Usage Guidelines

If Joint Interoperability Test Command (JITC) is enabled, only the **sha1** option is available.

If the NTP server or peer is configured without authentication keys, the NTP request is not sent to the configured server or peer.

The same set or subset of key ID and key string should be installed on all NTP devices.

The **no** form of the command removes the authentication key.

Examples

The following example shows how to configure an authentication key.

```
device(config)# ntp
device(config-ntp)# authentication-key key-id 1 md5 moof
```

auto-cost reference-bandwidth (OSPFv2)

Configures reference bandwidth.

Syntax

auto-cost reference-bandwidth { *value* | **use-active-ports** }

no auto-cost reference-bandwidth

Command Default

Reference bandwidth is 100 Mbps.

Parameters

value

Reference bandwidth in Mbps. Valid values range from 1 through 4294967.

use-active-ports

Specifies that any dynamic change in bandwidth immediately affects the cost of OSPF routes. This parameter enables cost calculation for currently active ports only.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Use this command to configure the cost of an interface that a device advertises to it's OSPF neighbors. OSPF calculates the cost of a route as the ratio of the reference bandwidth to the bandwidth of the egress interface. An increase in the reference bandwidth results in an increased cost. If the resulting cost is less than 1, the software rounds the cost up to 1.

The bandwidth for interfaces that consist of more than one physical port is calculated as follows:

- LAG group — The combined bandwidth of all the ports.
- Virtual interface — The lowest individual bandwidth of all the ports that carry the VLAN for the associated VE.

If a change to the reference bandwidth results in a cost change to an interface, the device sends a link-state update to update the costs of interfaces advertised by the device.

NOTE
If you specify the cost for an individual interface (by using the **ip ospf cost** command), the cost you specify overrides the cost calculated by the software.

The **no** form of the command disables bandwidth configuration.

Examples

The following example configures a reference bandwidth of 500.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# auto-cost reference-bandwidth 500
```

The reference bandwidth specified in this example results in the following costs:

- 10 Mbps port's cost = 500/10 = 50.
- 100 Mbps port's cost = 500/100 = 5.
- 1000 Mbps port's cost = 500/1000 = 0.5, which is rounded up to 1.

The costs for 10 Mbps and 100 Mbps ports change as a result of the changed reference bandwidth. Costs for higher-speed interfaces remain the same.

auto-cost reference-bandwidth (OSPFv3)

Configures reference bandwidth.

Syntax

auto-cost reference-bandwidth *value*

no auto-cost reference-bandwidth

Command Default

Reference bandwidth is 100 Mbps.

Parameters

value

Reference bandwidth in Mbps. Valid values range from 1 through 4294967. The default is 100 Mbps.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command to configure the cost of an interface that a device advertises to it's OSPF neighbors. OSPFv3 calculates the cost of a route as the ratio of the reference bandwidth to the bandwidth of the egress interface. An increase in the reference bandwidth results in an increased cost. If the resulting cost is less than 1, the software rounds the cost up to 1.

The bandwidth for interfaces that consist of more than one physical port is calculated as follows:

- LAG group — The combined bandwidth of all the ports.
- Virtual (Ethernet) interface — The combined bandwidth of all the ports in the port-based VLAN that contains the virtual interface.

If a change to the reference bandwidth results in a cost change to an interface, the device sends a link-state update to update the costs of interfaces advertised by the device.

NOTE
If you specify the cost for an individual interface using the **ipv6 ospf cost** command, the cost you specify overrides the cost calculated by the software.

Some interface types are not affected by the reference bandwidth and always have the same cost regardless of the reference bandwidth in use:

- The cost of a loopback interface is always 1.
- The cost of a virtual link is calculated using the Shortest Path First (SPF) algorithm and is not affected by the auto-cost feature.
- The bandwidth for tunnel interfaces is 9 Kbps and is subject to the auto-cost feature.

The **no** form of the command restores the reference bandwidth to its default value and, thus, restores the default costs of the interfaces to their default values.

Examples

The following example configures a reference bandwidth of 500.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# auto-cost reference-bandwidth 500
```

The reference bandwidth specified in this example results in the following costs:

- 10 Mbps port's cost = 500/10 = 50.
- 100 Mbps port's cost = 500/100 = 5.
- 1000 Mbps port's cost = 500/1000 = 0.5, which is rounded up to 1.
- 155 Mbps port cost = 500/155 = 3.23, which is rounded up to 4
- 622 Mbps port cost = 500/622 = 0.80, which is rounded up to 1
- 2488 Mbps port cost = 500/2488 = 0.20, which is rounded up to 1

The costs for 10 Mbps, 100 Mbps, and 155 Mbps ports change as a result of the changed reference bandwidth. Costs for higher-speed interfaces remain the same.

auto-enroll (PKI)

Sends enrollment message to the CA and local auto-enroll certificates.

Syntax

auto-enroll { *renewal_percentage* | **regenerate** }

no auto-enroll { *renewal_percentage* | **regenerate** }

Command Default

Auto-enrollment is not enabled.

Parameters

renewal_percentage

Sets the renewal percentage. The valid range is 10 through 90 per cent. The default is 80 per cent.

regenerate

Generates a new key pair for the certificates.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command disables auto-enrollment.

Examples

The following example enables auto-enrollment.

```
device# configure terminal
device(config)# pki trustpoint trust1
device(config-pki-trustpoint-trust1)# auto-enroll
```

History

Release version	Command history
08.0.70	This command was introduced.

auto-lacp

Configures the auto-LACP (Link Aggregation Control Protocol) deployment for a specific port or a range of ports.

Syntax

auto-lacp ethernet *stack-id/slot/port* [**ethernet** *stack-id/slot/port* | **to** *stack-id/slot/port*]

no auto-lacp ethernet *stack-id/slot/port* [**ethernet** *stack-id/slot/port* | **to** *stack-id/slot/port*]

Command Default

Auto-LACP is not deployed on any ports in the system.

Parameters

ethernet *stack-id/slot/port*

Specifies the Ethernet port or the beginning range of the port list in terms of stack ID, slot number, or port number.

to *stack-id/slot/port*

Specifies the end range of the port list in terms of stack ID, slot number, or port number.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the auto-LACP configuration for a specific port or range of ports.

Examples

The following example configures the auto-LACP deployment on the ports 1/1/7 and 2/1/11 to 2/1/12.

```
device(config)# auto-lacp ethernet 1/1/7 ethernet 2/1/11 to 2/1/12
```

History

Release version	Command history
08.0.40	This command was introduced.

autosave

Automatically saves learned secure MAC addresses to the startup configuration at specified intervals.

Syntax

autosave *time*

no autosave *time*

Command Default

By default, secure MAC addresses are not autosaved to the startup-config file.

Parameters

time

The interval between two autosaves, in minutes. The valid range is from 15 through1440 minutes.

Modes

Port security configuration mode

Port security interface configuration mode

Usage Guidelines

The autosave feature saves learned MAC addresses by copying the running configuration to the startup configuration.

If you change the autosave interval, the next save occurs according to the old interval, and then the new interval takes effect. To change the interval immediately, disable autosave by entering the **no autosave** command, and then configure the new autosave interval using the **autosave** command.

The **no** form of the command disables autosave.

Examples

The following example saves learned secure MAC addresses every 20 minutes automatically.

```
device(config)# port security
device(config-port-security)# autosave 20
```

The following example saves learned secure MAC addresses every 20 minutes automatically on an interface.

```
device(config)# port security
device(config-port-security)# interface ethernet 1/1/1
device(config-port-security-e1000-1/1/1)# autosave 20
```

backup

Designates a virtual router as a Virtual Router Redundancy Protocol (VRRP) or VRRP Extended (VRRP-E) backup device and configures priority and track values.

Syntax

backup [**priority** *value*] [**track-priority** *value*]

no backup [**priority** *value*] [**track-priority** *value*]

Command Default

No virtual routers are designated as a VRRP or VRRP-E backup device.

Parameters

priority *value*

Sets a priority value for a backup device. Values are from 8 through 254. In VRRP, the default backup device priority is 100, and the owner device has a default priority of 255. In VRRP-E, the default backup device priority is 100.

track-priority *value*

Sets the new priority value if the interface goes down. Values are from 1 through 254. Default is 2 for VRRP, and default is 5 for VRRP-E.

Modes

VRID interface configuration mode

Usage Guidelines

In VRRP, the backup device with the highest priority assumes the role of VRRP master device if the owner device fails. The interface on which the Virtual Routing ID (VRID) is configured must be in the same subnet (but not be the same address) as the IP address associated with the VRID by the owner device.

In VRRP-E, all devices are configured as backup devices and the backup device with the highest priority becomes the master device. If the master device fails, the backup device with the highest priority at that time assumes the role of VRRP master device. The IP address assigned to the interface of any device in the same virtual router must be in the same IP subnet. The IP address assigned to the VRID must not be configured on any of the ICX devices.

This command must be entered before the **ip-address** command can be configured for a VRRP or VRRP-E virtual routing ID.

The **no** form of this command removes the virtual router configuration.

Examples

The following example configures the device as a VRRP backup device and assigns it a priority of 110.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.5.3/24
device(config-if-e1000-1/1/5)# ip vrrp vrid 1
device(config-if-e1000-1/1/5-vrid-1)# backup priority 110
device(config-if-e1000-1/1/5-vrid-1)# advertise backup
device(config-if-e1000-1/1/5-vrid-1)# ip-address 10.53.5.254
device(config-if-e1000-1/1/5-vrid-1)# activate
```

The following example configures the device as a VRRP-E backup device and assigns it a priority of 50 and a track priority of 10.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.10.4/24
device(config-if-e1000-1/1/5)# ip vrrp vrid 2
device(config-if-e1000-1/1/5-vrid-2)# backup priority 50 track-priority 10
device(config-if-e1000-1/1/5-vrid-2)# ip-address 10.53.10.254
device(config-if-e1000-1/1/5-vrid-2)# activate
```

backup (VSRP)

Configures the device as a Virtual Switch Redundancy Protocol (VSRP) backup for the Virtual Routing ID (VRID) or changes the backup priority and the track priority.

Syntax

backup [**priority** *priority-number* [**track-priority** *track-number*]]

no backup [**priority** *priority-number* [**track-priority** *track-number*]]

Command Default

The default backup priority for the VSRP VRID is 100.

The default track priority for all track ports is 5.

Parameters

priority *priority-number*
: Configures the backup priority for the VSRP VRID. The range is from 6 through 255. The default value is 100.

track-priority *track-number*
: Configures the track priority for the VSRP VRID. The range is from 1 through 254. The default value is 5.

Modes

VSRP VRID configuration mode

Usage Guidelines

This configuration is important because in VSRP, all devices on which a VRID are configured are backups. The master is then elected based on the VSRP priority of each device. There is no "owner" device as there is in VRRP.

The backup priority is used for election of the master. The VSRP backup with the highest priority value for the VRID is elected as the master for that VRID. If two or more backups are tied with the highest priority, the backup with the highest IP address becomes the master for the VRID.

The track priority is used with the track port feature. When you configure a VRID to track the link state of other interfaces, if one of the tracked interface goes down, the software changes the VSRP priority of the VRID interface. The software reduces the VRID priority by the amount of the priority of the tracked interface that went down. For example, if the VSRP interface priority is 100 and a tracked interface with track priority 60 goes down, the software changes the VSRP interface priority to 40. If another tracked interface goes down, the software reduces the VRID priority again, by the amount of the tracked interface track priority.

The **no** form of the command without any options removes the device as the backup. The **no** form of the command with the options resets the backup priority value and the track priority value to the default values.

Examples

The following example configures the backup priority as 75.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup priority 75
device(config-vlan-200-vrid-1)# activate
```

The following example configures the backup priority as 100 and the track priority as 2.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup priority 100 track-priority 2
device(config-vlan-200-vrid-1)# activate
```

backup-hello-interval

Configures the interval at which backup Virtual Router Redundancy Protocol (VRRP) routers advertise their existence to the master router.

Syntax

backup-hello-interval *seconds*

no backup-hello-interval *seconds*

Command Default

The default backup hello interval is 60 seconds.

Parameters

seconds

The interval, in seconds, at which a backup VRRP router advertises its existence to the master router. Valid values range from 60 through 3600.

Modes

VRID interface configuration mode

Usage Guidelines

The interval is the length of time, in seconds, between each advertisement sent from the backup routers to the master router. The advertisement notifies the master router that the backup is still active. If the master router does not receive an advertisement from the backup router within a designated amount of time, the backup router with the highest priority can assume the role of master.

The **backup-hello-interval** command is configured only on VRRP backup routers and is supported by VRRP and VRRP Extended (VRRP-E).

The **no** form disables the advertisement of a VRRP backup router to a VRRP master router.

Examples

The following example enables advertisements from the VRRP backup router and sets the hello message interval to 80 seconds.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# backup priority 90
device(config-if-e1000-1/1/6-vrid-1)# advertise backup
device(config-if-e1000-1/1/6-vrid-1)# backup-hello-interval 80
```

backup-hello-interval (VSRP)

Configures the time interval during which Hello messages are sent by the backup.

Syntax

backup-hello-interval *seconds*

no backup-hello-interval *seconds*

Command Default

The backup sends a Hello message to the master every 60 seconds by default.

Parameters

seconds

Specifies the time interval for the backup to send the Hello messages. The time range is from 60 through 3600 seconds.

Modes

VSRP VRID configuration mode

Usage Guidelines

The **no** form of the command resets the time interval to the default value.

Examples

The following example changes the Hello message time interval.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup
device(config-vlan-200-vrid-1)# activate
device(config-vlan-200-vrid-1)# backup-hello-interval 180
```

bandwidth (Interface)

Sets and communicates bandwidth value for an interface to higher-level protocols such as OSPFv2 and OSPFv3, so this setting can be used to influence the routing cost for routes learned on these interfaces.

Syntax

bandwidth { *kilobits* }

no bandwidth { *kilobits* }

Command Default

For physical ports, the port speed is the default bandwidth. For VE interfaces and Link Aggregation Groups (LAGs), the sum of port speeds of individual physical ports is the default bandwidth.

Parameters

kilobits

Intended bandwidth, in kilobits per second. There is no default value for this parameter. The range is from 1 to 1000000000 kbps (100 Gbps).

Modes

Interface configuration mode

Usage Guidelines

This command is supported on all RUCKUS FastIron platforms.

You cannot adjust the actual bandwidth of an interface with this command. When you configure the interface bandwidth for virtual Ethernet that is associated with multiple physical interfaces, OSPF does not adjust its metric cost if one of those associated interfaces is down, and does not generate network and router link state advertisement.

The **no** form of the command removes the bandwidth value.

Examples

The following example sets the bandwidth to 2000 kbps on a specific Ethernet interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# bandwidth 2000
```

The following example sets the bandwidth to 2000 kbps on a specific virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# interface ve 10
device(config-vif-10)# bandwidth 2000
```

The following example sets the bandwidth to 2000 kbps on a specific tunnel interface.

```
device# configure terminal
device(config)# interface tunnel 2
device(config-tnif-2)# bandwidth 2000
```

History

Release version	Command history
08.0.30	This command was introduced.

banner

Defines a login banner.

Syntax

banner [**exec**] *banner-string*

no banner [**exec**] *banner-string*

banner motd { *banner-string* }

no banner motd { *banner-string* }

Command Default

A banner is not configured.

Parameters

exec

Sets the EXEC process creation banner; that is, the message to be displayed when you enter the Privileged EXEC mode.

banner-string

The ASCII string indicating the banner string in the format "c banner text c" where "c" is the delimiting character.

motd

Sets the message of the day (MOTD) banner; that is, the message to be displayed on a user terminal after a Telnet, SSH, or Console session is successfully authenticated.

Modes

Global configuration mode

Usage Guidelines

The *banner-string* includes a delimiting character. You begin and end the message with this delimiting character. The delimiting character can be any character except a double-quotation mark (") and cannot appear in the banner text. The banner text can be up to 4000 characters long and can consist of multiple lines.

The **no** form of the command removes the banner.

Examples

The following example shows how to set a banner with "c" as the delimiting character.

```
device(config)# banner c Good Morning! c
```

The following example shows how to set a MOTD banner with "$" as the delimiting character.

```
device(config)# banner motd $ Welcome!!! $
```

History

Release version	Command history
09.0.00	This command was modified to remove the **banner incoming** command and the **require-enter-key** option.

bfd

Enables Bidirectional Forwarding Detection (BFD).

Syntax

bfd

no bfd

Command Default

BFD is disabled by default.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

OSPF router configuration mode

OSPF router VRF configuration mode

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command in OSPF router configuration mode to configure BFD globally on all OSPFv2 interfaces with default session parameters. Use this command in OSPFv3 router configuration mode to configure BFD globally on all OSPFv3 interfaces with default session parameters.

Use this command in BGP configuration mode to enable or disable BFD sessions for BFD peers on all interfaces for this BGP instance.

This command is supported for ICX 7850 devices only.

The **no** form of the command disables BFD if it has been enabled.

Examples

The following example enables BFD globally in BGP configuration mode.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# bfd
```

The following example enables BFD globally in OSPF router configuration mode.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# bfd
```

The following example enables BFD globally in OSPFv3 router configuration mode.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# bfd
```

History

Release version	Command history
08.0.90	This command was introduced.

bfd holdover-interval

Configures the time interval for which Border Gateway Protocol (BGP) or Open Shortest Path First (OSPF) routes are withdrawn after a Bidirectional Forwarding Detection (BFD) session is declared down.

Syntax

bfd holdover-interval*time*

no bfd holdover-interval*time*

Command Default

No holdover interval is configured.

Parameters

time

Specifies the BFD holdover interval in seconds. Valid values range from 3 through 150.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

OSPF router configuration mode

OSPF router VRF configuration mode

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

If the holdover timer is configured, a protocol is not immediately notified about a session down state. The protocol waits until the period of time configured for the holdover timer has expired. If BFD declares a session up before the configured period of time expires, the holdover timer is cancelled. If the session remains down and the holdover timer expires, the protocol is then notified about the session down state.

Use this command in BGP configuration mode to set the BFD holdover interval globally for BGP. Use this command in OSPF router configuration mode or OSPF router VRF configuration mode to set the BFD holdover interval globally for OSPFv2. Use this command in OSPFv3 router configuration mode or OSPFv3 router VRF configuration mode to set the BFD holdover interval globally for OSPFv3.

The **no** form of the command removes the configured BFD holdover interval from the configuration and reverts to the default value of 0 so that no holdover interval is configured.

Examples

The following example sets the BFD holdover interval globally to 12 seconds in BGP configuration mode.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# bfd holdover-interval 12
```

The following example sets the BFD holdover interval globally to 10 seconds in OSPF router configuration mode.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# bfd holdover-interval 10
```

The following example sets the BFD holdover interval globally to 25 seconds in OSPFv3 router configuration mode.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# bfd holdover-interval 25
```

The following example resets the holdover interval in BGP configuration mode so that no holdover is configured.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# no bfd holdover-interval
```

History

Release version	Command history
08.0.90	This command was introduced.

bfd min-tx

Configures Bidirectional Forwarding Detection (BFD) session parameters for Border Gateway Protocol (BGP).

Syntax

bfdmin-tx*transmit-time***min-rx***receive-time***multiplier***number*

no bfdmin-tx*transmit-time***min-rx***receive-time***multiplier***number*

Command Default

The default parameters are used if BFD is enabled.

Parameters

transmit-time

Specifies the interval, in milliseconds, a device waits to send control packets to BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

min-rx*receive-time*

Specifies the interval, in milliseconds, a device waits to receive control packets from BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

multiplier*number*

Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD determines that the connection to that peer is down. Valid values range from 2 through 50. The default is 3.

Modes

BGP configuration mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

The **no** form of the command restores the defaults.

Examples

The following example sets the BFD session parameters globally for a BGP instance.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# bfd min-tx 200 min-rx 300 multiplier 7
```

History

Release version	Command history
08.0.90	This command was introduced.

bfd per-link

Enables micro-Bidirectional Forwarding Detection (micro-BFD) on each member link of a Link Aggregation Group (LAG) interface.

Syntax

bfd per-link

no bfd per-link

Command Default

Micro-BFD is disabled on LAG interfaces.

Modes

Interface subtype configuration mode

Usage Guidelines

This command is only supported for LAG interfaces.

Micro-BFD is only useful for point-to-point LAG interfaces.

This command is supported for ICX 7850 devices only.

The **no** form of the command disables micro-BFD sessions for the LAG interface.

Examples

The following example enables micro-BFD for a LAG interface.

```
device# configure terminal
device(config)# interface lag 11
device(config-lag-if-lg11)# bfd per-link
```

History

Release version	Command history
08.0.90	This command was introduced.

bgp-redistribute-internal

Causes the device to allow the redistribution of IBGP routes from BGP into OSPF for non-default VRF instances.

Syntax

bgp-redistribute-internal

no bgp-redistribute-internal

Command Default

This feature is disabled.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Use the **no** form of the command to restore the defaults.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

This example enables BGP4 route redistribution.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# bgp-redistribute-internal
```

This example enables BGP4+ route redistribution in BGP address-family IPv6 unicast configuration mode.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# bgp-redistribute-internal
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

block

Configures the time users must wait before the next cycle of Web Authentication begins after they have exceeded the limit for Web Authentication attempts.

Syntax

block [**mac** *mac-address*] **duration** *time*

no block [**mac** *mac-address*] **duration** *time*

Command Default

The default is 90 seconds.

Parameters

mac *mac-address*

Configures the host with the specified MAC address to be temporarily or permanently blocked from attempting Web Authentication.

duration *time*

Configures the time duration users must wait before the next cycle of Web Authentication attempts is allowed. Valid values are from 0 through 128,000 seconds. The default is 90 seconds, and entering 0 means the user is infinitely blocked.

Modes

Web Authentication configuration mode

Usage Guidelines

To unblock the MAC address, wait until the block duration timer expires or enter the **clear webauth vlan** *vlan-id* **block-mac** command.

The **no** form of the command resets the duration time to the default.

Examples

The following example configures the block duration to 1000 seconds.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# block duration 1000
```

The following example configures the block duration for a specific host.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# block mac 1111.2222.3333 duration 1000
```

block unknown-unicast

Blocks the unknown unicast traffic on ports, including Link Aggregation Group (LAG) ports.

Syntax

block unknown-unicast

no block unknown-unicast

Command Default

Unknown Unicast Flood Blocking (UUFB) is disabled by default.

Modes

Interface configuration mode

Usage Guidelines

UUFB is mutually exclusive with **route-only** feature. Either UUFB or the route-only command can be enabled at any time within a specific interface.

Use the **show interfaces ethernet** or **show running configuration** command to verify whether UUFB feature is enabled. Use the **show uufb enabled-ports** command to view the ports that are enabled for UUFB.

NOTE
UUFB blocks all the traffic if the destination MAC address is unknown, irrespective of its VLAN.

NOTE
Control packets are not impacted because the destination MAC addresses of control packets are multicast MAC addresses.

NOTE
CPU-bound traffic is not impacted because the CPU port is masked from the egress port.

The **no** form of the command unblocks the unknown unicast traffic.

Examples

The following example blocks the uniform unicast traffic.

```
device(config)# interface ethernet 1/1/1
device(config-interface-eth-1/1/1)# block unknown-unicast
device(config-interface-eth-1/1/1)# end
```

History

Release Version	Command History
09.0.10	This command was introduced.

boot system flash

Configures the device to boot from the image stored in the flash memory.

Syntax

boot system flash { **primary** | **secondary** } [**yes**]

no boot system flash { **primary** | **secondary** } [**yes**]

Command Default

By default, the device first attempts to boot from the image stored in its primary flash, then its secondary flash, and then from a TFTP server.

Parameters

primary

Configures to boot from the image stored in its primary flash.

secondary

Configures to boot from the image stored in its secondary flash.

yes

Confirms the system boot preference settings. This option is equivalent to using the **write memory** command. This option is available only in Privileged EXEC mode.

Modes

Privileged EXEC mode

Global configuration mode

Usage Guidelines

You can use boot commands to immediately initiate software boots from a software image stored in the primary or secondary flash on an ICX device.

It is very important that you verify a successful transfer of the boot code before you reset the system. If the boot code is not transferred successfully but you try to reset the system, the system will not have the boot code with which to successfully boot.

You can modify the default booting sequence in the global configuration mode using the **boot system** command.

Execute the **write memory** command to save the boot preferences to the startup configuration. If you are executing the **boot system flash** command from the Privileged EXEC mode, you can use the **yes** option to save the boot preference to the startup configuration. Executing the **write memory** command is not required in this case.

You can use the **show boot-preference** command to view the boot sequence preference.

The **no** form of the command resets the boot preference to the default.

Examples

The following example shows how to set the system to boot the image from the secondary flash.

```
device(config)# boot system flash secondary
```

The following example shows how to set the system to boot the image from the primary flash and save the preference to the startup configuration.

```
device# boot system flash primary yes
```

bootfile

Specifies the boot image to be used by the client.

Syntax

bootfile *name*

Parameters

name

Specifies the name of the bootfile to be used by the client.

Modes

DHCP server pool configuration mode

Examples

The following example specifies the bootfile name.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# bootfile foxhound
```

bootp-relay-max-hops

Modifies the maximum number of BootP or DHCP hops.

Syntax

bootp-relay-max-hops *max-hop*

no bootp-relay-max-hops *max-hop*

Command Default

By default, a RUCKUS Layer 3 switch forwards a BootP or DHCP request if its hop count is four or less, but discards the request if the hop count is greater than four.

Parameters

max-hop

Specifies the maximum number of hops. The parameter value can be from 1 through 15.

Modes

Global configuration mode

Usage Guidelines

Because the hop count value initializes at zero, the hop count value of an ingressing DHCP Request packet is the number of Layer 3 routers that the packet has already traversed.

Examples

The following example modifies the maximum number of BootP or DHCP hops to 10. The example allows the Layer 3 switch to forward BootP or DHCP requests that have passed through 10 previous hops before reaching the Layer 3 switch. Requests that have traversed 11 hops before reaching the switch are dropped.

```
device(config)# bootp-relay-max-hops 10
```

bpdu-flood-enable

Configures the MCT cluster devices to flood the SSTP or MSTP BPDUs in the SSTP or MSTP domain.

Syntax

bpdu-flood-enable

no bpdu-flood-enable

Command Default

BPDU flooding is not enabled.

Modes

Global configuration mode

Usage Guidelines

When **bpdu-flood-enable** is configured, there should not be any links other than the ICL connecting the two MCT cluster devices. If there is an additional link, then the flooded BPDU will cause a loop and high CPU utilization.

The **no** form of the command disables the BPDU flooding.

Examples

The following example shows how to configure BPDU flooding on the device.

```
device(config)# bpdu-flood-enable
Warning - Any recieved untagged BPDUs will now be flooded to all the ports.
```

breakout ethernet

Configures sub-ports from 40 Gbps or 100 Gbps ports.

Syntax

breakout ethernet*unit/slot/port*

breakout ethernet*unit/slot/port***toethernet***unit/slot/port*

breakout ethernet*unit/slot/port***ethernet***unit/slot/port*

no breakout ethernet*unit/slot/port*

no breakout ethernet*unit/slot/port***toethernet***unit/slot/port*

no breakout ethernet*unit/slot/port***ethernet***unit/slot/port*

Parameters

ethernet

Specifies the connection as ethernet.

unit/slot/port

Specifies the port to break out certain 40/100 Gbps ports into four 10/25 Gbps sub-ports for ICX 7850 devices. If there are two port identifiers in the command line, the first port designates the beginning port in a range of ports to be broken out, and the second port indicates the end of the breakout range. When a range is specified, the 10 Gbps sub-ports within the range are implicitly included.

to

Designates a range of ports to be configured when followed by an ending port identifier. This is an optional keyword.

Modes

Global configuration mode

Usage Guidelines

Use the **no** form of the command to remove breakout configuration from the designated port or range of ports.

No configuration may be present on a port for which the **breakout ethernet** command is issued. When the command is issued on a port with pre-existing configuration, an error message is returned. The existing configuration must be removed before the **breakout ethernet** command is re-issued.

The **breakout ethernet** command is available only on certain ICX 7850 40 Gbps ports and 100 Gbps ports. Refer to the *FastIron Ethernet Switch Administration Guide* for a table of available breakout ports. Refer to the *ICX 7850 Ethernet Switch Hardware Installation Guide* for detailed information on breakout cables.

The **breakout ethernet** command can be issued on stand-alone units only. Stacking cannot be enabled on a port configured for breakout. An error is returned if you try to enable stacking on a unit that has any breakout ports configured. The breakout configuration must be removed manually before stacking can be enabled. Use the **show breakout** command to display the breakout configuration for a unit.

The **breakout ethernet** and **no breakout ethernet** commands must be followed by a **write memory** command and a **reload** command for the port configuration changes to take effect.

Examples

The following example configures breakout on port 1/1/5, after existing configuration on the port is removed.

```
Device# configure terminal
Device(config)# breakout ethernet 1/1/5
Error: Port 1/1/5 has sflow forwarding
Device(config)# interface ethernet 1/1/5
Device(config-if-e40000-1/1/5)# no sflow forwarding
Device(config-if-e40000-1/1/5)# end
Device# write memory
Write startup-config done.
Device# configure terminal
Device(config)# breakout ethernet 1/1/5
Reload required.  Please write memory and then reload or power cycle.
Device(config)# write memory
Write startup-config done.
Device(config)# Flash Memory Write (8192 bytes per dot) .
Copy Done.
Device(config)# end
Device# reload
```

The following example checks for ports with active breakout configuration and then removes breakout from ports 1/3/1 through 1/3/6.

```
Device# show breakout

Unit-Id: 1

Port       Module Exist    Module Conf     breakout_conf   breakout_oper
1/1/5      Yes             No              Yes             Yes
1/1/6      Yes             No              Yes             Yes
1/1/7      Yes             No              Yes             Yes
1/1/8      Yes             No              Yes             Yes
1/1/9      Yes             No              Yes             Yes
1/1/10     Yes             No              Yes             Yes
1/1/11     Yes             No              Yes             Yes
1/1/12     Yes             No              Yes             Yes
1/2/1      Yes             No              Yes             Yes
1/2/2      Yes             No              Yes             Yes
1/2/3      Yes             No              Yes             Yes
1/2/4      Yes             No              Yes             Yes
1/2/5      Yes             No              Yes             Yes
1/2/6      Yes             No              Yes             Yes
1/3/1      Yes             No              Yes             Yes
1/3/2      Yes             No              Yes             Yes
1/3/3      Yes             No              Yes             Yes
1/3/4      Yes             No              Yes             Yes
1/3/5      Yes             No              Yes             Yes
1/3/6      Yes             No              Yes             Yes

Device# configure terminal
Device(config)# no breakout ethernet 1/3/1 to 1/3/6
Reload required.  Please write memory and then reload or power cycle.
Device(config)# write memory
Write startup-config done.

Device(config)# Flash Memory Write (8192 bytes per dot) .
Copy Done.
Device(config)# end
Device# reload
```

NOTE

If there had been any configuration on any sub-ports (1/3/1:1 to 1/3/6:4), the **no breakout** command would have returned an error. The configuration would then have to be removed from the sub-ports before breakout configuration could be removed.

History

Release version	Command history
08.0.30	This command was introduced.

broadcast client

Configures a device to receive Network Time Protocol (NTP) broadcast messages on a specified interface.

Syntax

broadcast client

no broadcast client

Command Default

The broadcast mode is not enabled.

Modes

NTP interface configuration mode

Usage Guidelines

An NTP broadcast client can be enabled on a maximum of 16 Ethernet interfaces. If the interface is operationally down or if NTP is disabled, the NTP broadcast server packets are not received.

The **no** form of the command disables the capability of a device to receive NTP broadcast messages.

Examples

The following example configures a device to receive NTP broadcast messages on a specified interface.

```
device(config)# ntp
device(config-ntp)# ntp-interface management 1
device(config-ntp-mgmt-1)# broadcast client
```

broadcast destination

Configures Network Time Protocol (NTP) broadcast destination options.

Syntax

broadcast destination *ip-address* [**key** *key-id*] [**version** *version-number*]

no broadcast destination *ip-address* [**key** *key-id*] [**version** *version-number*]

Command Default

The broadcast mode is not enabled.

Parameters

ip-address

Specifies the IPv4 subnet address of the device to send NTP broadcast messages.

key *key-id*

Specifies the authentication key ID. By default, no authentication key is configured. Valid values are from 1 through 65535.

version *version-number*

Specifies the NTP version number.The version options are 3 and 4. The default value is 4.

Modes

NTP interface configuration mode

Usage Guidelines

The NTP broadcast server can be enabled on a maximum 16 Ethernet interfaces and four subnet addresses per interface. If the interface is operationally down or there is no IP address configured for the subnet address, the NTP broadcast server packets are not sent.

NOTE
This command is not effective if the NTP server is disabled.

The **no** form of the command disables the broadcast option.

Examples

The following example configures NTP broadcast destination options.

```
device(config)# ntp
device(config-ntp)# ntp-interface management 1
device(config-ntp-mgmt-1)# broadcast destination 10.20.99.0 key 2 version 3
```

broadcast limit

Configures the maximum number of broadcast packets allowed per second and generates infralogs for pps packets.

Syntax

broadcast limit*num*

broadcast limit*num***kbps**

broadcast limit*num***kbpslog**

rate-limit-log*num*

rate-limit-pps-log*num*

broadcast limit*num*[**kbps**|**pps**]**threshold***num***actionport-shutdown***num*

no broadcast limit*num*

no broadcast limit*num***kbps**

no broadcast limit*num***kbpslog**

no-rate-limit-log*num*

no rate-limit-pps-log*num*

no broadcast limit*num*[**kbps**|**pps**]**threshold***num***actionport-shutdown***num*

Command Default

Broadcast rate limiting is disabled.

Parameters

num

Specifies the maximum number of broadcast packets per second. For kbps, the value can be from 1 through 1000000. For pps, the value can be from 1 through 8388607.

kbps

Enables byte-based limiting. The value can be 1 to Max Port Speed.
When kbps is not specified, the rate limiting happens in packets per second (pps).

log

Enables Syslog logging when the broadcast limit exceeds *num***kbps**.

rate-limit-log

Configures the log timer for the kbps ports. The value can be from 1 through 10 minutes. Default value is 5 minutes.

rate-limit-pps-log

Configures the log timer for the pps ports. The value can be from 1 through 600 seconds. Default value is 300 seconds.

threshold*num*

Specifies the packet drop count threshold value. For kbps, valid values range from 1 through 1048576. For pps, valid values range from 1 through 8388607.

action

Specifies further action must be taken.

port-shutdown

Specifies that port shutdown is the action taken.

For pps, the port shutdown value is from 1 through 65535. Default value is 5 minutes.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of the command to disable broadcast rate limiting.

Examples

The following example enables a broadcast rate limit of 131072 Kbps.

```
device(config)# interface ethernet 9/1/1
device(config-if-e1000-9/1/1)# broadcast limit 131072 kbps
```

The following example enables broadcast limit logging when the configured broadcast limit exceeds 100 Kbps.

```
device(config)# interface ethernet 1/2/1
device(config-if-e10000-1/2/1)# broadcast limit 100 kbps log
```

The following example enables the kbps log timer interval to 3 minutes when kbps rate limit is configured.

```
device(config)# rate-limit-log 3
```

The following example enables the pps log timer interval to 200 seconds when pps rate limit is configured.

```
device(config)# rate-limit-pps-log 200
```

The following example sets the packet drop count threshold value for kbps to 2000 and specifies that the port shutdown action is taken.

```
device(config)# interface ethernet 1/2/1
device(config-if-e10000-1/2/1)# broadcast limit 100 kbps threshold 2000 action port-shutdown 7
```

The following example sets the packet drop count threshold value for pps to 1500 and specifies that the port shutdown action is taken.

```
device(config)# interface ethernet 1/2/2
device(config-if-e10000-1/2/2)# broadcast limit 1500 pps threshold 2000 action port-shutdown 7
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.40a	The command was modified to include the **log** keyword.
09.0.10	The command was modified to include the **pps** keyword and pps log timer was introduced.

bsr-candidate

Configures a bootstrap router (BSR) as a candidate to distribute rendezvous point (RP) information to the other PIM Sparse devices within a PIM Sparse domain.

Syntax

bsr-candidate ethernet *unit/slot/port hash-mask-length* [*priority*]

bsr-candidate lag *lag-id hash-mask-length* [*priority*]

bsr-candidate loopback *num hash-mask-length* [*priority*]

bsr-candidate ve *num hash-mask-length* [*priority*]

bsr-candidate tunnel *num hash-mask-length* [*priority*]

no bsr-candidate

Command Default

The PIM router does not participate in BSR election.

Parameters

ethernet *unit/slot/port*
Specifies the Ethernet interface for the candidate BSR.

lag *lag-id*
Specifies the LAG virtual interface.

loopback *num*
Specifies the loopback interface for the candidate BSR.

ve *num*
Specifies the virtual interface for the candidate BSR.

tunnel *num*
Specifies a GRE tunnel interface.

hash-mask-length
Specifies the number of bits in a group address that are significant when calculating the group-to-RP mapping. The range is 1 to 32.

NOTE
It is recommended that you specify 30 for IPv4 networks.

priority
Specifies the BSR priority. The range is from 0 to 255, from low to high. The default is 0.

Modes

PIM Router configuration mode

Usage Guidelines

The **no** form of this command makes the PIM router cease to act as a candidate BSR.

Each PIM Sparse domain has one active BSR. For redundancy, you can configure ports on multiple devices as candidate BSRs. The PIM Sparse protocol uses an election process to select one of the candidate BSRs as the BSR for the domain. The BSR with the highest BSR priority is elected. If the priorities result in a tie, the candidate BSR interface with the highest IP address is elected.

Although you can configure the device as only a candidate BSR or an RP, it is recommended that you configure the same interface on the same device as both a BSR and an RP.

Examples

The following example uses a physical interface to configure a device as a candidate BSR.

```
device(config)# router pim
Device(config-pim-router)# bsr-candidate ethernet 1/2/2 30 255
```

The following example uses a loopback interface to configure a device as a candidate BSR.

```
device(config)# router pim
device(config-pim-router)# bsr-candidate loopback 1 30 240
```

The following example uses a virtual interface to configure a device as a candidate BSR.

```
device(config)# router pim
device(config-pim-router)# bsr-candidate ve 120 30 250
```

History

Release version	Command history
08.0.20	This command was modified to add the **tunnel** keyword.
08.0.61	This command was modified to add **lag** *lag-id* options.

bsr-msg-interval

Sets the PIM BSR message interval timer.

Syntax

bsr-msg-interval *time*

no bsr-msg-interval *time*

Command Default

The default IPv6 PIM BSR message interval timer is 60 seconds.

Parameters

time

Defines the interval at which the BSR sends RP candidate data to all IPv6-enabled routers within the IPv6 PIM Sparse domain. Valid values are 10 to 65535 seconds. The default is 60 seconds.

Modes

IPv6 router PIM configuration

Usage Guidelines

The BSR message interval timer defines the interval at which the BSR sends RP candidate data to all IPv6-enabled routers within the IPv6 PIM Sparse domain

The **no** form of the command resets the IPv6 PIM BSR message interval timer to the default value of 60 seconds.

Examples

The following example sets the IPv6 PIM BSR message interval timer to 16 seconds.

```
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# bsr-msg-interval 16
```

The following example sets the IPv6 PIM BSR message interval timer to 16 seconds for a specified VRF.

```
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# bsr-msg-interval 16
```

Commands C

cable-signal-error-scan

Sets the cable signal error scan interval for 2.5G ports.

Syntax

cable-signal-error-scan interval *interval*

no cable-signal-error-scan

Command Default

The cable signal error scan interval is set to five seconds.

Parameters

interval *interval*

Specifies the cable signal error scan interval, in seconds. Valid values range from through 3600 seconds. The default is 5 seconds.

Modes

Global configuration mode

Usage Guidelines

This command is enabled by default and helps to identify deteriorating cables in the customer network, by identifying any cable signal errors proactively and logging the SYSLOG message so that the user can monitor the link. By default, every 5 seconds the cables connected to the 2.5G ports are monitored for cable signal errors. If the cable signal error scanning interval is altered from the default of 5 seconds, the new interval remains even after a reload. The confiugred cable signal error scanning interval is stored in the running and startup configuration.

Cable signal error scanning support is supported for 2.5G ports only.

If the cable signal error scanning interval is set to a value lower than 5 seconds, it can result in high CPU utilization.

The **no** form of the command re-enables cable signal error scanning if it has been disabled. If cable signal error scanning is disabled, it remains disabled even after a reload.

Examples

The following example disables cable signal error scanning.

```
device# configure terminal
device(config)# no cable-signal-error-scan
```

The following example re-enables cable signal error scanning, if it has been disabled, and restores the default of five seconds.

```
device# configure terminal
device(config)# cable-signal-error-scan interval 5
```

History

Release version	Command history
08.0.95h	This command was introduced.

capability as4

Enables 4-byte autonomous system number (ASN) capability at the BGP global level.

Syntax

capability as4 { **disable** | **enable** }

no capability as4 { **disable** | **enable** }

Command Default

This feature is disabled.

Parameters

disable

Disables 4-byte ASN capability at the BGP global level.

enable

Enables 4-byte ASN capability at the BGP global level.

Modes

BGP configuration mode

Usage Guidelines

Use the **no** form of this command to disable this functionality.

Examples

To enable 4-byte ASN capability:

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# capability as4 enable
```

captive-portal

Creates a user-defined Captive Portal profile.

Syntax

captive-portal *profile-name*

no captive-portal *profile-name*

Parameters

profile-name

Specifies the name of the user-defined Captive Portal profile.

Modes

Global configuration mode

Usage Guidelines

The Captive Portal profile serves as a template that includes configuration details specific to the external web server, such as virtual IP address, HTTP or HTTPS protocol port number, and login-page details hosted on the external captive portal server.

The details configured in the Captive Portal profile enable the switch to handle HTTP redirection mechanism and redirects the client to the login page hosted on the external captive portal server.

The Captive Portal profile can be attached to an external Web Authentication-enabled VLAN using the **captive-portal profile** command.

The **no** form of the command removes the Captive Portal profile.

Examples

The following example creates the user-defined Captive Portal profile cp_ruckus.

```
device(config)# captive-portal cp_ruckus
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 08.0.30j.

captive-portal profile

Applies a configured Captive Portal profile on a Web Authentication-enabled VLAN.

Syntax

captive-portal profile *profile-name*

no captive-portal profile *profile-name*

Command Default

A Captive Portal profile is not applied on a Web Authentication-enabled VLAN.

Parameters

profile-name

Specifies the Captive Portal profile to be applied on a Web Authentication-enabled VLAN.

Modes

Web Authentication configuration mode

Usage Guidelines

The **no** form of the command removes the Captive Portal profile from the Web Authentication-enabled VLAN.

Examples

The following example binds the Captive Portal profile cp_ruckus on Web Authentication-enabled VLAN 10.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# captive-portal profile cp_ruckus
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 08.0.30j.

ccep-up-delay

In an MCT configuration, places client cluster edge port (CCEP) dynamic LAGs in a blocking state for the specified time while Client Cluster Protocol (CCP) comes up. This allows for better traffic convergence.

Syntax

ccep-up-delay {*value* }

no ccep-up-delay {*value* }

Command Default

By default, the timer is disabled.

Parameters

value

Sets the timeout value in seconds. Available range is 0 thorugh 600. A setting of 0 (the default) disables the timer.

Modes

MCT cluster configuration sub-mode

Usage Guidelines

The **no** form of the command resets the configuration to the default, disabling the timer.

The recommended **ccep-up-delay** setting for most scenarios is 300 seconds.

Use of this timer is optional. It is recommended for MCT networks with scaled clients and MACs.

Whenever client cluster protocol (CCP) restarts, for example, following a reload, a re-deployment, an undeployments, or Inter-chassis link (ICL) flap, the timer keeps dynamic Client Cluster Edge Port (CCEP) LAGs on the peer in BLOCKING state. This allows MACs and mcache entries to sync properly, which prevents large drops or spikes in traffic.

Examples

The following example configures the timer on two MCT cluster peers to 300 seconds.

```
RUCKUS-1# configure terminal
RUCKUS-1(config)# cluster mct_stack 1000
RUCKUS-1(config-cluster-mct_stack)# ccep-up-delay 300
RUCKUS-1(config-cluster-mct_stack)# exit
RUCKUS-1(config)#

RUCKUS-2# configure terminal
RUCKUS-2(config)# cluster mct_stack 1000
RUCKUS-2(config-cluster-mct_stack)# ccep-up-delay 300
RUCKUS-2(config-cluster-mct_stack)# exit
RUCKUS-2(config)#
```

History

Release version	Command history
FastIron release 09.0.10	This command was introduced.

cdp enable

Enables Cisco Discovery Protocol (CDP) at the interface level.

Syntax

cdp enable

no cdp enable

Command Default

CDP is not enabled. CDP is enabled on an interface once CDP is enabled on the device.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables CDP on an interface.

Examples

The following example enables CDP on an interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# cdp enable
```

cdp run

Enables the device to intercept and display Cisco Discovery Protocol (CDP) messages.

Syntax

cdp run

no cdp run

Command Default

CDP is disabled by default.

Modes

Global configuration mode

Usage Guidelines

This command also enables the device to detect CDP power requirements.

The **no** form of the command disables the device from intercepting and displaying CDP messages.

Examples

The following example enables the device to intercept and display CDP messages.

```
device(config)# cdp run
```

cfg-archive management compare-archives

Compares two archives and shows the differences between them.

Syntax

cfg-archive management compare-archives *archive-name* **with** *archive-name*

Parameters

archive-name

Specifies an archive.

with

Specifies that the archive be compared with another archive.

Modes

Privileged EXEC mode

Usage Guidelines

There are three files involved while comparing two archive files: a baseline file, a compare file, and an ignore file. The ignore file contains strings that are used as a comment and should be ignored. There are two types of archive comparison; comparison between two archives, and comparison between the running configuration and an existing archive.

When two archives are compared, The first archive becomes the base file and the second archive becomes the compare file.

Examples

The following example compares two archives and displays the differences.

```
device# cfg-archive management compare-archives ICX7K_ARCHIVE_01 with ICX7K_ARCHIVE_02
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management compare-running-config

Compares an archive with the running configuration.

Syntax

cfg-archive management compare-running-config *archive-name*

Command Default

An archive is not compared with the running configuration.

Parameters

archive-name

Specifies an archive name.

Modes

Privileged EXEC mode

Examples

The following example compares an archive with the running configuration.

```
device# cfg-archive management compare-running-config ICX7K_ARCHIVE_01
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management compare-startup-config

Compares an archive with the startup configuration.

Syntax

cfg-archive management compare-startup-config *archive-name*

Command Default

An archive is not compared with the startup configuration.

Parameters

archive-name

Specifies an archive name.

Modes

Privileged EXEC mode

Examples

The following example compares an archive with the startup configuration.

```
device# cfg-archive management compare-startup-config 10
```

History

Release version	Command history
09.0.00a	This command was introduced.

cfg-archive management copy

Enables the ability to copy a file to an archive, or an archive to another archive.

Syntax

cfg-archive management copy ICX7K_ARCHIVE_01 to ICX7K_ARCHIVE_02

Command Default

Archives or files are not copied.

Parameters

archive name

Specifies an archive where mn is a serial number 00 to 99.

to

Specifies the destination where the file or archive will be copied.

Modes

Privileged EXEC mode

Examples

The following example copies a specified archive to another archive.

```
DUT#cfg-archive management copy
ICX7K_ARCHIVE_02 to ICX7K_ARCHIVE_04
copy ICX7K_ARCHIVE_02 to ICX7K_ARCHIVE_04
ICX7K_ARCHIVE_02 is copied to
ICX7K_ARCHIVE_04
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management copy-running-config

Copies the running configuration to an archive.

Syntax

cfg-archive management copy-running-config *archive-name*

Modes

Privileged EXEC mode

Examples

The follow example copies to the running configuration to a specified archive.

```
device# cfg-archive management copy-running-config ICX7K_ARCHIVE_02
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management delete

Deletes a specified archive or all archives.

Syntax

cfg-archive management delete {**all** | *archive name* }

Parameters

all

Specifies all archives

archive name

Specifies an archive name.

Modes

Privileged EXEC mode

Examples

The following deletes all archives.

```
DUT# cfg-archive management delete all
  ASCII string   all or an existing archive name, ICX7K_ARCHIVE_mn, where mn is
                 a serial number 00 to 99
  <cr>
DUT# cfg-archive management delete all
  <cr>
DUT# cfg-archive management delete all
Candidates of archive to be deleted:
0 : ICX7K_ARCHIVE_12
1 : ICX7K_ARCHIVE_13
2 : ICX7K_ARCHIVE_14
3 : ICX7K_ARCHIVE_15
4 : ICX7K_ARCHIVE_16
5 : ICX7K_ARCHIVE_17
6 : ICX7K_ARCHIVE_18
7 : ICX7K_ARCHIVE_19
8 : ICX7K_ARCHIVE_21
9 : ICX7K_ARCHIVE_22
10 : ICX7K_ARCHIVE_31
11 : ICX7K_ARCHIVE_32
12 : ICX7K_ARCHIVE_33
13 : ICX7K_ARCHIVE_34
About to delete the listed archives above. Are you sure you want to delete all file(s)? (enter 'y' or
'n'): y
DUT#
```

The following example deletes a specified archive.

```
DUT# cfg-archive management delete ICX7K_ARCHIVE_20
About to delete an archive. Are you sure you want to delete? (enter 'y' or 'n'): y
DUT#
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management delete-unsaved-cfg

Deletes an unsaved running configuration after a system reload.

Syntax

cfg-archive management delete-unsaved-cfg

Modes

Privileged EXEC mode

Usage Guidelines

If the running configuration is changed and not saved, configuration archive auto-revert reloads the system after the expiration of a set amount of time. The unsaved running configuration is saved in the non-volatile memory. Use this command to delete the unsaved running configuration after a reload.

Examples

The following example deletes the unsaved running configuration.

```
device# cfg-archive management delete-unsaved-cfg

About to delete the unsaved running configuration before reload. Are you sure you want to delete?
(enter 'y' or 'n'): y
```

History

Release version	Command history
09.0.00a	This command was introduced.

cfg-archive management list

Lists all archive names in the repository.

Syntax

cfg-archive management list { **ascending** | **descending** }

Parameters

ascending

Lists all of archive names in ascending order.

descending

Lists all of archive names in descending order.

Modes

Privileged EXEC mode

Examples

The following exmaple lists archive management lists in ascending order.

```
device# cfg-archive management list ascending
List all available archives from new to old
    current_archive_files=19 [maximum number of archives allowed=20]

    List of archives:
    ICX7K_ARCHIVE_81      499 Dec  5   2020
    ICX7K_ARCHIVE_80      476 Dec  5   2020
    ICX7K_ARCHIVE_51     17471 Nov 29   2020
    ICX7K_ARCHIVE_79      520 Nov 19   2020
    ICX7K_ARCHIVE_78      759 Nov 19   2020
    ICX7K_ARCHIVE_77      954 Nov 16   2020
    ICX7K_ARCHIVE_76      557 Nov 16   2020
    ICX7K_ARCHIVE_75     3147 Nov 16   2020
    ICX7K_ARCHIVE_74      613 Nov 16   2020
    ICX7K_ARCHIVE_73      513 Nov 15   2020
    ICX7K_ARCHIVE_72      499 Nov 12   2020
    ICX7K_ARCHIVE_71      483 Nov 12   2020
    ICX7K_ARCHIVE_70      460 Nov 12   2020
    ICX7K_ARCHIVE_60      538 Nov  7   2020
    ICX7K_ARCHIVE_50      538 Nov  7   2020
    ICX7K_ARCHIVE_40      538 Nov  7   2020
    ICX7K_ARCHIVE_09      646 Sep 18  23:41
    ICX7K_ARCHIVE_91      651 Sep 18  04:13
    ICX7K_ARCHIVE_90      623 Sep 18  04:11
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management reload-with-archive

Enables the ability to reload the system with a specific archive without changing the startup configuration.

Syntax

cfg-archive management reload-with-archive { **pri CX7K_ARCHIVE_01** | **sec** } *archive name*

Command Default

The system is not reloaded.

Parameters

pri

Specifies the primary partition.

sec

Specifies the secondary partition.

archive name

Specifies an archive where mn is a serial number 00 to 99.

Modes

Privileged EXEC mode

Examples

The following example reloads the system with an existing archive in the repository.

```
device# cfg-archive management reload-with-archive pri CX7K_ARCHIVE_01
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management rename

Enables the ability to rename an existing archive.

Syntax

cfg-archive management rename ICX7K_ARCHIVE_01 to ICX7K_ARCHIVE_02 *archive name* **to** *archive name*

Command Default

Archives are not renamed.

Parameters

archive name

Specifies an archive where mn is a serial number 00 to 99.

to *archive name*

Specifies the new archive name.

Modes

Privileged EXEC mode

Examples

The following example renames an existing archive.

```
device# cfg-archive management rename ICX7K_ARCHIVE_01 to ICX7K_ARCHIVE_02
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management show-archive-content

Displays the content of an archive.

Syntax

cfg-archive management show-archive-content *archive name*

Parameters

archive name

Specifies an archive name.

Modes

Privileged EXEC mode

Examples

The following example shows the content of a designated archive.

```
device# cfg-archive management show-archive-content ICX7K_ARCHIVE_01
```

History

Release version	Command history
09.0.00	This command was introduced.

cfg-archive management show-current-config

Displays the current running configuration.

Syntax

cfg-archive management show-current-config

Modes

Privileged EXEC mode

Examples

The following example displays the current running configuration.

```
device# cfg-archive management show-current-config

Revert option timer : 5 minute(s) 0 second(s)
Confirm wait timer : 30 minute(s) 0 second(s)
Confirm mode : Auto
Boot Partition : Primary
Auto revert : Enable
Golden archive : Auto mode
```

History

Release version	Command history
09.0.00a	This command was introduced.

cfg-archive management show-unsaved-cfg

Displays the unsaved running configuration before the last system reload.

Syntax

cfg-archive management show-unsaved-cfg

Modes

Privileged EXEC mode

Examples

The following example displays the unsaved running configuration before the last system reload.

```
device# cfg-archive management show-unsaved-cfg
```

History

Release version	Command history
09.0.00a	This command was introduced.

cfg-archive revert

Enables or disables configuration archive auto-revert.

Syntax

cfg-archive revert { **disable** | **enable** | **now** | **status** }

Command Default

Configuration archive auto-revert is not enabled.

Parameters

disable
Disables configuration archive auto-revert..

enable
Enables configuration archive auto-revert.

now
Reverts the running configuration immediately.

status
Displays status information.

Modes

Privileged EXEC mode

Usage Guidelines

This command can be used successfully only if the running configruation has been changed.

Examples

The following example enables configuration archive auto-revert.

```
device# cfg-archive revert enable
```

The following example disables configuration archive auto-revert.

```
device# cfg-archive revert disable
```

The following example immediately reverts the running configuraiton if it has been changed.

```
device# cfg-archive revert now
```

The following example shows the state transition, state name, and elapsed time in the current state.

```
device# cfg-archive revert status

Current state : START_STATE
Elapsed time : 19 second(s)
```

History

Release version	Command history
09.0.00a	This command was introduced.

cfg-archive revert-option

Configures configuration archive auto-revert options.

Syntax

cfg-archive revert-option { **archive** { *archive-name* | **auto** }| **archive-size** { *size* } | **auto-revert-timer** [*time*] | **boot-partition** [**pri** | **sec**]| **confirm-type** { **auto** | **manual** }| **confirm-wait-timer** *time* |**update-archive-content** }

Command Default

Configuration archive auto-revert is not configured.

Parameters

archive

Specifies an archive.

archive-name

Sets the golden archive that is used when reloading the system, instead of the startup configuration.

auto

Specifies that the startup configuration is used when reloading the system. This is the default. In this instance, **auto** refers to startup configuration.

archive-size *size*

Specifies the number of archives allowed. Valid values range from 5 through 100. The default is 100.

auto-revert-timer *time*

Specifies or displays the automatic revert timer interval, in minutes. Valid values range from 1 through 1440 minutes. The default value is 5 minutes. If an interval value is not entered, the current configuration value is displayed. If an interval is entered, the configuration value is updated.

boot-partition

Specifies or displays the partition to be used when using configuration archive auto-revert. If a partition is not designated, the current booting partition is displayed.

pri

Specifies the primary partition. This is the default.

sec

Specifies the secondary partition.

confirm-type

Sets the confirmation type.

auto

Specifies automatic confirmation. This is the default.

manual

Specifies manual confirmation.

confirm-wait-timer *time*
: Sets or shows the confirm wait timer. Valid values range from 1 through 1440 minutes. The default is 30 minutes. If an interval is not entered, the current configuration value is displayed.

update-archive-content
: Specifies that the golden archive is updated with the latest running configuration.

Modes

Privileged EXEC mode

Examples

The following example configures a specified golden archive to be used used when reloading the system instead of the startup configuration.

```
device# cfg-archive revert-option archive 10
```

The following example designates the startup configuration as the golden archive.

```
device# cfg-archive revert-option archive auto
```

The following example sets the automatic revert timer interval to ten minutes.

```
device# cfg-archive revert-option auto-revert-timer 10
```

The following example displays the configured automatic revert timer.

```
device# cfg-archive revert-option auto-revert-timer

Revert option timer : 1 minute(s) 0 second(s)
```

The following example specifies that the secondary partition be used when auto-reverting.

```
device# cfg-archive revert-option boot-partition sec
```

The following example displays the configured partition that is used when using configuration archive auto-revert.

```
device# cfg-archive revert-option boot-partition
Boot Partition : Primary
```

The following example sets the confirm wait timer to ten minutes.

```
device# cfg-archive revert-option confirm-wait-timer 10
```

The following example displays the configured confirm wait timer.

```
device# cfg-archive revert-option confirm-wait-timer

Confirm wait timer : 1 minute(s) 0 second(s)
```

The following example specifies that a reload is automatically initiated after the configured wait time expires.

```
device# cfg-archive revert-option confirm-type auto
```

The following example specifies that the golden archive is updated with the latest running configuration.

```
device# cfg-archive revert-option update-archive-content
```

The following example specifiies the number of archives allowed in the system.

```
device# cfg-archive revert-option archive-size 98

maximum number of archive allowed[old=100 new=98]
```

History

Release version	Command history
09.0.10a	This command was introduced.
09.0.10d	This command was modified to add **cfg-archive revert-option archive-size**, which replaces **cfg-archive management archive-size**.

chassis name

Configures a chassis name.

Syntax

chassis name *name*

no chassis name *name*

Command Default

A chassis name is not configured.

Parameters

name

Specifies the name of the chassis.

Modes

Global configuration mode

Usage Guidelines

This command does not change the CLI prompt. Instead, the command assigns an administrative ID to the device.

The **no** form of the command removes the chassis name.

Examples

The following example configures a chassis name.

```
device(config)# chassis name ch_2
```

clear 802-1w statistics

Clear the Rapid Spanning Tree Protocol (RSTP) (802.1W) statistics for the specified VLAN.

Syntax

clear 802-1w statistics vlan *vlan-id*

Parameters

vlan *vlan-id*

Clears the statistics for a specific VLAN.

Modes

Privileged EXEC mode

History

Release version	Command history
10.0.00	This command was introduced.

clear access-list

Clears ACL counters.

Syntax

clear access-list { **all** | *std-acl-num* | *ext-acl-num* }

Parameters

all

Clears all ACL counters.

std-acl-num

Clears the counter for the specified standard ACL. Valid values are from 1 through 99.

extd-acl-num

Clears the counter for the specified extended ACL. Valid values are from 100 through 199.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example clears all the ACL counters.

```
device# clear access-list all
```

The following example clears the counter for the standard ACL 10.

```
device# clear access-list 10
```

clear access-list accounting

Clears access control list (ACL) accounting statistics for IPv4 ACLs, IPv6 ACLs, and Layer 2 MAC filters.

Syntax

clear access-list accounting all

clear access-list accounting *interface-type interface-name* [**in** | **out**] [**IPv4** | **IPv6**]

Parameters

all
Clears all statistics for all ACLs.

interface-type interface-name
Specifies the interface type (Ethernet, virtual interface, or LAG) and the ID of the interface.

in
Clears statistics of the inbound ACLs. If no direction is set, statistics for both inbound and outbound are cleared.

out
Clears statistics of the outbound ACLs. If no direction is set, statistics for both inbound and outbound are cleared.

IPv4
Clears statistics for IPv4 ACLs. Statistics for both IPv4 and IPv6 ACLs are cleared if this value is not set.

IPv6
Displays statistics for IPv6 ACLs. Statistics for both IPv4 and IPv6 ACLs are cleared if this value is not set.

Modes

Privileged EXEC mode

Examples

The following example clears ACL accounting statistics for all configured ACLs.

```
device# clear access-list accounting all
```

The following example clears ACL accounting statistics, for inbound ACLs, for a specific port.

```
device# clear access-list accounting ethernet 1/1/5 in
```

The following example clears ACL accounting statistics, for outbound IPv6 ACLs, for a specific port.

```
device# clear access-list accounting ve 100 out ipv6
```

The following example clears ACL accounting statistics, for outbound IPv4 ACLs, for a specific port.

```
device# clear access-list accounting ve 100 out ipv4
```

The following example clears ACL accounting statistics, for inbound ACLs, for a specific LAG.

```
device# clear access-list accounting lag 1 in
```

The following example clears ACL accounting statistics, for outbound IPv4 ACLs, for a specific LAG.

```
device# clear access-list accounting lag 1 out IPv4
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.61	This command was modified to add **lag** *lag-id* options.
08.0.70	This command was modified to allow clearing of statistics of outbound ACLs.

clear acl-on-arp

Clears the count of how many ARP packets have been dropped on the interface.

Syntax

clear acl-on-arp

Modes

Privileged EXEC mode

Global configuration mode

Usage Guidelines

The Filter Count column in the output of the **show acl-on-arp** command shows how many ARP packets have been dropped on the interface since the last time the count was cleared. The **clear acl-on-arp** command resets the filter count on all interfaces in a device back to zero.

Examples

The following example clears the count of how many ARP packets have been dropped on the interface.

```
device# clear acl-on-arp
```

clear arp

Removes entries from the Address Resolution Protocol (ARP) table.

Syntax

clear arp [**ethernet** *unit/slot/port* | **lag** *number* | **ve** *lag-id*] [**dynamic** | **pending**]

clear arp [*ip-address* [*ip-mask*] | **dynamic** | **mac-address** *mac-address-mask* [*mac-address*] | **pending**]

clear arp vrf *vrf-name* [**ethernet** *stack/slot/port* | **lag** *number*] [**dynamic** | **pending**]

clear arp vrf *vrf-name* [*ip-address* [*ip-mask*] | **dynamic** | **mac-address** *mac-address* [*mac-address*] | **pending**]

Parameters

ethernet *unit/slot/port*
Removes ARP entries for the specified Ethernet interface.

lag *lag-id*
Removes ARP entries for the LAG virtual interface.

ve *ve-number*
Removes ARP entries for the specified Virtual Ethernet (VE) interface.

dynamic
Clears dynamic ARP entries.

pending
Clears pending ARP entries.

ip-address
Clears only one ARP entry for the specified IPv4 address in the given VRF.

ip-mask
Clears all ARP entries matching the specified IP address and IP mask.

mac-address
Clears all ARP entries matching the MAC address.

mac-address-mask
Clears ARP arp entries matching the Mac address and MAC address mask.

vrf *vrf-name*
Removes ARP entries for the specified VRF instance.

Modes

Privileged EXEC mode

Usage Guidelines

The **dynamic**, **pending**, and **ve** keywords are not supported for Layer 2 switches.

If ARP entries are deleted from an Ethernet or LAG interface that is part of multiple VE interfaces, ARP entries are deleted for the port on all matching VE interfaces.

Examples

The following example deletes ARP entries learned on a specified Layer 3 VE interface.

```
device# clear arp ve 5
```

The following example deletes dynamic ARP entries learned on a specified Layer 3 VE interface.

```
device# clear arp ve 4 dynamic
```

The following example deletes pending ARP entries learned on a specified Layer 3 VE interface.

```
device# clear arp ve 3 pending
```

The following example deletes pending ARP entries learned on a specified Ethernet interface.

```
device# clear arp ethernet 1/2/1 pending
```

The following example deletes dynamic ARP entries learned on a specified Ethernet interface.

```
device# clear arp ethernet 1/2/1 dynamic
```

The following example deletes pending ARP entries learned on a specified LAG interface.

```
device# clear arp lag 3 pending
```

The following example deletes dynamic ARP entries learned on a specified LAG interface.

```
device# clear arp lag 2 dynamic
```

History

Release version	Command history
08.0.95	The **dynamic**, **pending**, and **ve** keywords were added for Layer 3 routers.

clear authentication sessions

Clears 801.1X and MAC authentication sessions on an interface or a range of interfaces.

Syntax

clear authentication sessions [**ethernet** { *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*] } | **unit** *unit_number* | *mac_address*]

Parameters

ethernet { *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*] }
: Specifies the interface or range of interfaces on which authentication sessions are cleared.

unit *unit_number*
: Specifies the stack unit on which authentication sessions are cleared.

mac_address
: Specifies the MAC address (in HHHH.HHHH.HHH form) for which authentication sessions are cleared.

Modes

Privileged EXEC mode or any configuration mode

Usage Guidelines

The **clear authentication sessions** command with no parameters clears sessions for a stack or standalone unit.

Examples

The following example clears authentication sessions for port 1//1/1.

```
device# clear authentication sessions ethernet 1/1/1
```

The following example clears authentication sessions on a range of ports on unit 1.

```
device# clear authentication sessions ethernet 1/1/1 to 1/1/10
```

The following example clears authentication sessions on stack unit 3.

```
device# clear authentication sessions unit 3
```

The following example clears authentication sessions for an entire stack or for a standalone unit.

```
device# clear authentication sessions
```

The following example clears authentication sessions for the MAC address specified.

```
clear authentication sessions 0000.0034.abd4
```

History

Release version	Command history
08.0.80	This command was introduced.

clear authentication statistics

Clears 802.1X and MAC authentication sessions and statistics on an interface or range of interfaces.

Syntax

clear authentication statistics [**ethernet** { *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*] } | **unit** *unit_number*]

Parameters

ethernet { *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*] }

Specifies the interface or range of interfaces on which statistics are cleared.

unit *unit_number*

Specifies the stack unit on which statistics are cleared.

Modes

Privileged EXEC mode or any configuration mode

Usage Guidelines

The command **clear authentication statistics** without parameters clears authentication statistics for the entire stack or standalone unit.

Examples

The following example clears authentication statistic counters for port 1//1/1.

```
device# clear authentication statistics ethernet 1/1/1
```

The following example clears authentication statistics on a range of ports on unit 1.

```
device# clear authentication statistics ethernet 1/1/1 to 1/1/10
```

The following example clears statistics on stack unit 3.

```
device# clear authentication statistics unit 3
```

The following example clears statistics for an entire stack or for a standalone unit.

```
device# clear authentication statistics
```

History

Release version	Command history
08.0.80	This command was introduced.

clear cable diagnostics tdr

Clears the results of Virtual Cable Test (VCT) TDR testing (if any) conducted on the specified port

Syntax

clear cable-diagnostics tdr *stackid/slot/port*

Command Default

By default, the results of the previous test (if any) are present and are displayed in response to the **show cable-diagnostics tdr** command for the specified port.

Parameters

stackid/slot/port

Identifies the specific interface (port), by device, slot, and port number in the format shown.

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to clear TDR test registers before every TDR cable diagnostic test. Most ICX devices support VCT technology. VCT technology enables the diagnosis of a conductor (wire or cable) by sending a pulsed signal into the conductor, then examining the reflection of that pulse. This method of cable analysis is referred to as Time Domain Reflectometry (TDR). By examining the reflection, the ICX device can detect and report cable statistics such as local and remote link pair, cable length, and link status.

Use the command in conjunction with the **phy cable-diagnostics tdr stackid/slot/port** command to test the interface.

Show diagnostic test results using the **show cable-diagnostics tdr stackid/slot/port** command.

Examples

In the following example, results from the previous test are cleared from the third interface on the second slot of the first device in the stack.

```
device# clear cable-diagnostics tdr 1/2/3
```

History

Release version	Command history
08.0.20	This command was introduced.

clear chassis unit-id

Resets the LED warning light for a power supply after a temporary power fluctuation.

Syntax

clear chassis unit-id *unit-number* **ps-device** *device-number* }

Parameters

unit number

Specifies the Unit ID number. Valid values range from 1 through 12.

ps-device *device-number*

Specifies the power supply device number.

Modes

Global configuration mode

Usage Guidelines

When the Power Supply DC LED is blinking red, indicating that the power supply has detected an over-current condition, the warning light can be cleared using this command.

This command is only supported for ICX 8200 devices.

Examples

The following example clears PSU 1 over the current warning LED for an ICX 8200 standalone device.

```
ICX8200-48ZP2 Router# clear chassis unit-id 1 ps-device 1 led
ICX8200-48ZP2 Router#clear chassis unit-id 1 ps-device 2 led      (To clear PSU 2 over current warning
led)
```

The following example clears PSU 2 over the current warning LED for an ICX 8200 standalone device.

```
ICX8200-48ZP2 Router# clear chassis unit-id 1 ps-device 2 led
```

The following example clears PSU 1 and PSU2 over the current warning LED of unit id 3 for a stack setup.

```
show stack

T=2m46.2: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX8200-48PF  active  c0c5.2080.1bbc   0 local   Ready
2  S ICX8200-48P   standby c0c5.2080.23f6   0 remote  Ready
3  D ICX8200-48PF2 member  c0c5.2080.2a80   0 remote  Ready

   standby      active
     +---+        +---+        +---+
  2/3| 2 |2/1--2/3| 1 |2/1--2/3| 3 |2/1
     +---+        +---+        +---+
Standby u2 - Learn other units for 15 sec, protocols may not be ready in 55 s.
Current stack management MAC is c0c5.2080.1bbc

ICX8200-48PF Router# clear chassis unit-id 3 ps-device 1 led
ICX8200-48PF Router# clear chassis unit-id 3 ps-device 2 led
```

History

Release version	Command history
10.0.00	This command was introduced.

clear cli-command-history

Clears the allocated logging memory and removes the command log history.

Syntax

clear cli-command-history

Modes

Privileged EXEC mode

Global configuration mode

Examples

The following example clears the command log history.

```
device(config)# clear cli-command-history
```

History

Release version	Command history
08.0.40	This command was introduced.

clear dhcp

Clears the DHCP binding database.

Syntax

clear dhcp[*ip-address*][**vrf***vrf-name*]

clear dhcp[**vrf***vrf-name*]

Parameters

ip-address
: Specifies the IP address of the client.

vrf*vrf-name*
: Specifies a non-default VRF instance.

Modes

User EXEC mode

Usage Guidelines

You can remove all entries in the database or remove entries for a specific IP address only.

Examples

The following example removes all entries from the DHCP binding database.

```
device# clear dhcp
```

The following example clears entries for a specific IP address.

```
device# clear dhcp 10.10.102.4
```

The following example clears entries for a non-default VRF instance.

```
device# clear dhcp vrf red
```

History

Release version	Command history
08.0.95	This command was modified to add the **vrf***vrf-name* option.

clear dlogger logs

Clears distributed logger logs and filter configurations.

Syntax

clear dlogger logs

Modes

Privileged EXEC mode

Examples

The following example clears all the distributed logger logs.

```
device# clear dlogger logs
```

History

Release version	Command history
09.0.00	This command was introduced.

clear dot1x sessions

Clears 802.1X authentication sessions.

Syntax

clear dot1x sessions { *mac-address* | **stack-unit** *id* | **ethernet** *unit/slot/port* }

Parameters

mac-address

Specifies the MAC address from which the 802.1X authentication sessions are to be cleared.

stack-unit *id*

Specifies the stack unit from which the 802.1X authentication sessions are to be cleared.

ethernet *unit/slot/port*

Specifies the interface from which the 802.1X authentication sessions are to be cleared.

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to clear the 802.1X authentication sessions.

Examples

The following example clears the 802.1X authentication session for the specified MAC address.

```
device(config)# clear dot1x sessions 0000.0034.abd4
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	The command was modified to include the **stack-unit** *id* option.

clear dot1x statistics

Clears 802.1X authentication statistics.

Syntax

clear dot1x statistics ethernet *unit/slot/port* [**stack-unit** *id*]

Parameters

ethernet *unit/slot/port*

Specifies the interface on which the 802.1X authentication statistics are to be cleared.

stack-unit *id*

Specifies the stack unit on which the 802.1X authentication statistics are to be cleared.

Modes

Privileged EXEC mode

Examples

The following example clears 802.1X authentication statistics.

```
device# configure terminal
device(config)# clear dot1x statistics
```

The following example clears 802.1X authentication statistics on a specific interface.

```
device# configure terminal
device(config)# clear dot1x statistics ethernet 1/1/1
```

History

Release version	Command history
08.0.20	The **all** option was removed from the command for ICX 6430, ICX 6450, ICX 6610, and FCX devices.
08.0.70	The **stack-unit** option was added.

clear dot1x-mka statistics

Clears current MACsec Key Agreement (MKA) statistics.

Syntax

clear dot1x-mka statistics ethernet *unit/slot/port*

Parameters

ethernet *unit/slot/port*

Specifies an Ethernet interface by device position in stack, slot on the device, and interface on the slot.

Modes

User EXEC mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

Examples

In the following example, MKA statistics are cleared for Ethernet interface 1/3/3 (port 3 of slot 3 on the first device in the stack).

```
device# clear dot1x-mka statistics ethernet 1/3/3
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

clear fdp counters

Clears Foundry Discovery Protocol (FDP) and Cisco Discovery Protocol (CDP) statistics.

Syntax

clear fdp counters

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example clears FDP and CDP statistics.

```
device(config)# clear fdp counters
```

clear fdp table

Clears the information received in Foundry Discovery Protocol (FDP) and Cisco Discovery Protocol (CDP) updates from neighboring devices.

Syntax

clear fdp table

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

This command clears all updates for FDP and CDP.

Examples

The following example clears FDP and CDP updates from neighboring devices.

```
device(config)# clear fdp table
```

clear ikev2 sa

Clears Internet Key Exchange version 2 security associations (IKEv2 SAs).

Syntax

clear ikev2 sa [**fvrf** *vrf-name* | **ipv4** | **local** *ip-address* | **remote** *ip-address*]

Parameters

fvrf *vrf-name*
: Specifies the front-door VRF (FVRF) for the SAs.

ipv4
: Specifies clearing IPv4 connections.

local *ip-address*
: Specifies the local IPv4 address for the SAs.

remote *ip-address*
: Specifies the remote IPv4 address for the SAs.

Modes

Privileged EXEC mode

Usage Guidelines

The clearing process deletes and re-establishes the SAs (including any child SAs).

When optional parameters are not specified, the command clears all IKEv2 SAs on the device.

NOTE
Clearing all IKEv2 SAs is a costly operation. Therefore, the unqualified version of the command should be used with caution. Issuing multiple unqualified versions of the command within a short time frame is not recommended.

Examples

The following example clears the IKEv2 SAs for local interface 10.10.20.1.

```
device# clear ikev2 sa local 10.10.20.1
```

The following example clears the IKE SAs for remote interface 10.0.10.1.

```
device# clear ikev2 sa remote 10.0.10.1
```

History

Release version	Command history
08.0.50	This command was introduced.

clear ikev2 statistics

Clears Internet Key Exchange version 2 (IKEv2) statistics by resetting the various IKEv2 counters to zero.

Syntax

clear ikev2 statistics

Modes

Privileged EXEC mode

Examples

The following example clears IKEv2 statistics from the device.

```
device# clear ikev2 statistics
```

History

Release version	Command history
08.0.50	This command was introduced.

clear ip bgp dampening

Reactivates suppressed BGP4 routes.

Syntax

clear ip bgp dampening [*ip-addr* { **/** *mask* }]

Parameters

ip-addr

IPv4 address of a specified route in dotted-decimal notation.

mask

IPv4 mask of a specified route in CIDR notation.

Modes

Privileged EXEC mode

Examples

The following example unsuppresses all suppressed BGP4 routes.

```
device# clear ip bgp dampening
```

clear ip bgp flap-statistics

Clears the dampening statistics for a BGP4 route without changing the dampening status of the route.

Syntax

clear ip bgp flap-statistics [*ip-addr* { **/** *mask* } | **neighbor** *ip-addr* | **regular-expression** *string*]

Parameters

ip-addr

Specifies the IPv4 address of a specified route in dotted-decimal notation.

mask

Specifies the IPv4 mask of a specified route in CIDR notation.

neighbor

Clears dampening statistics only for routes learned from the specified neighbor.

ip-addr

Specifies the IPv4 address of the neighbor.

regular-expression

Specifies a regular expression.

string

Regular expression.

Modes

Privileged EXEC mode

Examples

The following example clears the dampening statistics for a BGP4 route.

```
device# clear ip bgp flap-statistics 10.0.0.0/16
```

clear ip bgp local routes

Clears BGP4 local routes from the IP route table and resets the routes.

Syntax

clear ip bgp local routes

Modes

Privileged EXEC mode

Examples

The following example clears all BGP4 local routes.

```
device# clear ip bgp local routes
```

clear ip bgp neighbor

Requests a dynamic refresh of BGP4 connections or routes from a neighbor, with a variety of options.

Syntax

clear ip bgp neighbor { **all** | *as-num* | *peer-group-name* | *ip-addr* } [**last-packet-with-error**] [**notification-errors**] [**soft** [**in** | **out**]] [**soft-outbound**] [**traffic**]

Parameters

all
Resets and clears all BGP4 connections to all neighbors.

as-num
Clears all BGP4 connections within this autonomous system. Range is from 1 through 4294967295.

peer-group-name
Clears all BGP4 connections in this peer group. Range is from 1 through 63 characters.

ip-addr
Clears all BGP4 connections with this IPv4 address, in dotted-decimal notation.

last-packet-with-error
Clears all BGP4 connections identified as having the last packet received with an error.

notification-errors
Clears all BGP4 connections identified as having notification errors.

soft
Refreshes routes received from or sent to the neighbor.

in
Refreshes received routes.

out
Refreshes sent routes.

soft-outbound
Refreshes all outbound routes by applying new or changed filters, but sends only the existing routes affected by the new or changed filters to the neighbor.

NOTE
Use **soft-outbound** only if the outbound policy is changed. This operand updates all outbound routes by applying the new or changed filters. However, the device sends to the neighbor only the existing routes that are affected by the new or changed filters. The **soft out** operand updates all outbound routes and then sends the entire BGP4 route table on the device to the neighbor after the device changes or excludes the routes affected by the filters.

traffic
Clears the counters (resets them to 0) for BGP4 messages.

Modes

Privileged EXEC mode

Examples

The following example refreshes all BGP4 neighbor connections.

```
device# clear ip bgp neighbor all
```

clear ip bgp routes

Clears BGP4 routes from the IP route table and resets the routes.

Syntax

clear ip bgp routes [*ip-addr* [**/** *mask*]]

Parameters

ip-addr

Specifies the IPv4 address of a specified route in dotted-decimal notation.

mask

Specifies the IPv4 mask of a specified route in CIDR notation.

Modes

Privileged EXEC mode

Examples

The following example clears all BGP4 routes.

```
device# clear ip bgp routes 10.0.0.0/16
```

clear ip bgp traffic

Clears the BGP4 message counter for all neighbors.

Syntax

clear ip bgp traffic

Modes

Privileged EXEC mode

Examples

The following example clears the BGP4 message counters:

```
device# clear ip bgp traffic
```

clear ip bgp vrf

Clears BGP4 information for a virtual routing and forwarding (VRF) instance.

Syntax

clear ip bgp vrf *vrf-name*

Parameters

vrf *vrf-name*

Specifies the name of a VRF instance.

Modes

Privileged EXEC mode

Examples

The following example clears BGP4 information for VRF red.

```
device# clear ip bgp vrf red
```

clear ip dhcp-server binding

Clears the leases from the lease binding database.

Syntax

clear ip dhcp-server binding { *address* | * }

Parameters

address

The IP address to be deleted.

*

Wildcard clears all lease entries.

Modes

Global configuration mode

Usage Guidelines

Use this command to delete to delete a specific lease, or all lease entries from the lease binding database.

Examples

The following example clears all lease entries.

```
device(config)# clear ip dhcp-server binding *
```

clear ip igmp cache

Clears the IGMP group membership table from a VRF instance or from all interfaces on the device.

Syntax

clear ip igmp [**vrf** *vrf-name*] **cache**

Parameters

vrf *vrf-name*

Specifies the name of a VRF instance. When this parameter is specified, the command is executed only on the specified VRF instance.

cache

Clears the IGMP group membership table from a specified VRF instance or from all interfaces.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears information for all VRF instances.

Examples

The following example clears the IGMP group membership table for the device.

```
device# clear ip igmp cache
```

The following example clears the IGMP membership information on a single virtual routing interface, vpn1.

```
device# clear ip igmp vrf vpn1 cache
```

clear ip igmp traffic

Clears statistics for IGMP traffic from a VRF instance or from all interfaces on the device.

Syntax

clear ip igmp [**vrf** *vrf-name*] **traffic**

Parameters

vrf *vrf-name*

Specifies the name of a VRF instance. When this parameter is specified, the command is executed only on the specified VRF instance.

traffic

Clears multicast traffic statistics from a specified VRF instance or from all interfaces.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears information for all VRF instances.

Examples

The following example clears all multicast statistics on the device.

```
device# clear ip igmp traffic
```

The following example clears the multicast statistics on the virtual routing interface, vpn1.

```
device# clear ip igmp vrf vpn1 traffic
```

clear ip mroute

Removes multicast routes from the IP multicast routing table .

Syntax

clear ip mroute [**vrf** *vrf-name*] [*ip-address* {*ip-mask* | *mask-bits* }]

Parameters

vrf *vrf-name*
: Specifies a VRF.

ip-address
: Specifies an IP address.

ip-mask
: Specifies an IP subnet mask.

mask-bits
: Specifies a subnet mask in bits.

Modes

Global configuration mode

Usage Guidelines

After multicast routes are cleared from an IP multicast routing table, the best static multicast routes are added back to the routing table.

When used without specifying a **vrf** *vrf-name* this command clears multicast routes from the multicast routing table.

Examples

The following example removes all mroutes from the IP multicast routing table:

```
Device# configure terminal
Device(config)# clear ip mroute
```

The following example removes all mroutes from the vrf green IP multicast routing table:

```
Device# configure terminal
Device(config)# clear ip mroute vrf green
```

The following example removes mroute 10.0.0.2/24 from the IP multicast routing table:

```
Device# configure terminal
Device(config)# clear ip mroute 10.0.0.2/24
```

History

Release version	Command history
08.0.10a	This command was introduced.

clear ip msdp peer

Clears multicast source discovery protocol (MSDP) peer information.

Syntax

clear ip msdp [**vrf** *vrf-name*] **peer** [*ip-addr*]

Parameters

vrf *vrf-name*

Specifies a VRF instance.

peer

Clears MSDP peer information.

ip-addr

Specifies a VRF peer. If you do not specify a peer, MSDP information for all peers is cleared.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears information for all VRF instances.

A message is displayed when the connection is closed.

Examples

The following example clears the MSDP peer connection with MSDP router 192.168.162.1.

```
device# clear ip msdp peer 192.168.162.1
```

clear ip msdp sa-cache

Clears the multicast source discovery protocol (MSDP) source active (SA) cache.

Syntax

clear ip msdp [**vrf** *vrf-name*] **sa-cache** [*ip-addr*]

Parameters

vrf *vrf-name*

Specifies a VRF instance.

sa-cache

Clears MSDP source active cache information.

ip-addr

Specifies a source or a group to clear. If you do not specify a source or group, all SA cache entries are cleared.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears the SA cache for all VRF instances.

Examples

The following example clears the MSDP SA cache.

```
device# clear ip msdp sa-cache
```

clear ip msdp statistics

Clears multicast source discovery protocol (MSDP) statistics.

Syntax

clear ip msdp [**vrf** *vrf-name*] **statistics** [*ip-addr*]

Parameters

vrf *vrf-name*
: Specifies a VRF instance.

statistics
: Clears MSDP statistics information.

ip-addr
: Specifies a VRF peer.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears information for all VRF instances.

Examples

The following example clears MSDP statistics.

```
device# clear ip msdp statistics
```

clear ip multicast counters

Clears IGMP snooping on error and traffic counters for all VLANs.

Syntax

clear ip multicast counters

Modes

Privileged EXEC mode

Examples

The following example clears IGMP snooping on error and traffic counters.

```
device# clear ip multicast counters
```

clear ip multicast mcache

Clears the multicast forwarding mcache for all VLANs.

Syntax

clear ip multicast mcache [*ip-addr*]

Parameters

ip-addr

Specifies a source or a group to clear. If you do not specify a source or group, all cache entries are cleared.

Modes

Privileged EXEC mode

Examples

The following example clears the multicast forwarding mcache for all VLANs

```
device# clear ip multicast mcache
```

clear ip multicast vlan

Clears traffic counters on a specified VLAN.

Syntax

clear ip multicast vlan *vlan-id* { **mcache** [*ip-addr*] | **statistics**

Parameters

vlan-id

Specifies a VLAN.

mcache

Specifies the multicast forwarding mcache.

ip-addr

Specifies a source or a group to clear. If you do not specify a source or group, all cache entries are cleared.

statistics

Specifies IGMP snooping statistics.

Modes

Privileged EXEC mode

Examples

The following example clears IGMP snooping statistics on VLAN 20.

```
device# clear ip multicast vlan 20 statistics
```

clear ip ospf

Clears OSPF process, counters, neighbors, or routes.

Syntax

clear ip ospf all

clear ip ospf neighbor { *A.B.C.D* | **all** } [**ethernet** *unit/slot/port* | **lag** *lag-id* | **tunnel** *number* | **ve** *vlan_id*]

clear ip ospf routes { *A.B.C.D/L* | **all** }

clear ip ospf traffic

Parameters

all
Globally resets (disables then re-enables) OSPF without deleting the OSPF configuration information.

neighbor
Clears the specified neighbor, or clears all neighbors.

A.B.C.D
Specifies the IP address of the neighbor to clear.

all
Clears all neighbors.

ethernet *unit/slot/port*
Specifies the Ethernet interface and the interface ID in the format unit/slot/port.

lag *lag-id*
Specifies the LAG virtual interface.

tunnel *number*
Specifies a tunnel.

ve *vlan_id*
Specifies a virtual Ethernet (VE) interface.

routes
Clears matching routes or clears all routes.

A.B.C.D
Clears all routes that match the prefix and mask that you specify.

all
Clears all routes.

traffic
Clears OSPF counters and errors.

Modes

User EXEC mode

Examples

The following example resets OSPF without deleting the OSPF configuration.

```
device# clear ip ospf all
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

clear ip pim cache

Clears the PIM forwarding cache on a specific VRF instance or on all VRFs.

Syntax

clear ip pim [**vrf** *vrf-name*] **cache** [*ip-address*]

Parameters

vrf *vrf-name*

Specifies a VRF instance.

cache

Specifies the PIM forwarding cache.

ip-address

Specifies the source or group address of the entry to clear.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears the PIM forwarding cache for all VRFs.

Examples

The following example clears the PIM forwarding cache on a VRF instance named blue.

```
device# clear ip pim vrf blue cache
```

clear ip pim counters

Clears PIM message counters.

Syntax

clear ip pim [**vrf** *vrf-name*] **counters**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

counters

Specifies PIM message counters.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears the PIM message counters for all VRFs.

Examples

The following example clears the PIM message counters.

```
Device# clear ip pim counters
```

The following example clears the PIM message counters on a XRF named blue.

```
Device# clear ip pim vrf blue counters
```

clear ip pim hw-resource

Clears the PIM hardware resource fail count for a specific VRF instance or for all VRFs.

Syntax

clear ip pim [**vrf** *vrf-name*] **hw-resource**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

hw-resource

Specifies hardware resource fail count.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears the PIM hardware resource fail count for all VRFs.

Examples

The following example clears the PIM hardware resource fail count.

```
Device# clear ip pim hw-resource
```

clear ip pim rp-map

Updates the entries in the static multicast forwarding table for a specific VRF instance or for all VRFs.

Syntax

clear ip pim [**vrf** *vrf-name*] **rp-map**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

rp-map

Specifies the entries in a PIM sparse static multicast forwarding table.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears the PIM forwarding cache for all VRFs.

Configure this command to update the entries in the static multicast forwarding table immediately after making rendezvous point (RP) configuration changes. This command is meant to be used with the **rp-address** command.

Examples

The following example clears the entries in a PIM sparse static multicast forwarding table on a VRF instance named blue.

```
Device# clear ip pim vrf blue rp-map
```

clear ip pim traffic

Clears PIM traffic for a specific VRF instance or on all VRFs.

Syntax

clear ip pim [**vrf** *vrf-name*] **traffic**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

traffic

Specifies PIM traffic.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears PIM traffic for all VRFs.

Examples

The following example clears PIM traffic on a VRF instance named blue.

```
device# clear ip pim vrf blue traffic
```

clear ip pimsm-snoop

Clears PIM sparse mode (SM) information.

Syntax

clear ip pimsm-snoop [**vlan***vlan-id*] { **cache** [*ip-address*] | **stats**}

Parameters

vlan*vlan-id*

Specifies clearing information on a specific VLAN.

cache

Specifies clearing the PIM SM snooping cache.

ip-address

Specifies clearing PIM SM snooping-cache information on a specific source or group.

stats

Specifies clearing traffic and error counters.

Modes

Global configuration mode

Examples

The following example clears PIM SM information from all VLANs.

```
Device(config)#clear ip pimsm-snoop cache
```

The following example clears PIM SM information from a specific VLAN.

```
Device(config)#clear ip pimsm-snoop vlan 10 cache
```

The following example clears PIM SM information from a specific source.

```
Device(config)#clear ip pimsm-snoop cache 10.1.1.1
```

The following example clears traffic and error counters from all VLANs.

```
Device(config)#clear ip pimsm-snoop stats
```

History

Release version	Command history
08.0.20	This command was introduced.

clear ip route

Clears entire IP route table or specific routes.

Syntax

clear ip route [**vrf** *vrf-name*] [*ip-address*]

Parameters

vrf *vrf-name*

Specifies the VPN Routing and Forwarding instance.

ip-address

Specifies the route entry to be cleared from the IP route table. The IP address can be specified in the format A.B.C.D/L where L is the mask bits or as A.B.C.D followed by network mask.

Modes

Privileged EXEC mode

Usage Guidelines

The command, when used without any parameters, clears the entire IP route table.

When an interface subnet route with an interface address that directly matches a host route learned from a neighboring device is configured and subsequently removed, the **clear ip route** command should be used so that the learned route is updated in the Routing and Hardware Forwarding table.

NOTE
The L2 and L3 protocols might flap in case the number of L3 routes are more.

Examples

The following example clears the IP route 10.157.22.0/24 from the IP routing table.

```
device# clear ip route 10.157.22.0/24
```

clear ip tunnel

Clears statistics (reset all fields to zero) for all IP tunnels or for a specific tunnel interface.

Syntax

clear ip tunnel { **pmtud** *tunnel-id* | **stat** [*tunnel-id*]}

Parameters

pmtud *tunnel-id*

Resets a dynamically-configured MTU on a tunnel Interface back to the configured value.

stat

Clears statistics of all tunnels.

tunnel-id

Clears statistics of the specified tunnel.

Modes

Privileged EXEC mode

Usage Guidelines

You can also use the **clear statistics tunnel** command to clear tunnel statistics.

Examples

The following example clears statistics for all IP tunnels.

```
device# clear ip tunnel stat
```

The following example clears the statistics for a specific tunnel interface.

```
device# clear ip tunnel stat 2
```

The following example resets a dynamically-configured MTU on a tunnel interface.

```
device# clear ip tunnel pmtud 1
```

clear ip vrrp statistics

Clears IPv4 Virtual Router Redundancy Protocol (VRRP) statistics.

Syntax

clear ip vrrp statistics

Modes

Privileged EXEC mode

Usage Guidelines

This command can be entered in privileged EXEC mode and in any configuration mode. Entering the command in a configuration mode can be useful if you are configuring VRRP options, for example, and want to clear existing statistics.

Examples

The following example clears IPv4 VRRP statistics when entered in privileged EXEC mode.

```
device# clear ip vrrp statistics
```

The following example clears IPv4 VRRP statistics when entered in VRID interface configuration mode.

```
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# clear ip vrrp statistics
```

clear ip vrrp-extended statistics

Clears IPv4 Virtual Router Redundancy Protocol (VRRP) Extended (VRRP-E) statistics.

Syntax

clear ip vrrp-extended statistics

Modes

Privileged EXEC mode

Usage Guidelines

This command can be entered in privileged EXEC mode and in any configuration mode. Entering the command in a configuration mode can be useful if you are configuring VRRP-E options, for example, and want to clear existing statistics.

Examples

The following example clears IPv4 VRRP-E statistics when entered in privileged EXEC mode.

```
device# clear ip vrrp-extended statistics
```

The following example clears IPv4 VRRP-E statistics when entered in VRID interface configuration mode.

```
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.4.1/24
device(config-if-e1000-1/1/5)# ip vrrp-extended vrid 2
device(config-if-e1000-1/1/5-vrid-2)# clear ip vrrp-extended statistics
```

clear ipv6 bgp dampening

Reactivates suppressed BGP4+ routes.

Syntax

clear ipv6 bgp dampening [*ipv6-addr* { **/** *mask* }]

Parameters

ipv6-addr

IPv6 address of a specified route in dotted-decimal notation.

mask

IPv6mask of a specified route in CIDR notation.

Modes

Privileged EXEC mode

Examples

The following example unsuppresses all suppressed BGP4+ routes.

```
device# clear ipv6 bgp dampening
```

clear ipv6 bgp flap-statistics

Clears the dampening statistics for a BGP4+ route without changing the dampening status of the route.

Syntax

clear ipv6 bgp flap-statistics [*ipv6-addr* { **/** *mask* } | **neighbor** *ipv6-addr* | **regular-expression** *string*]

Parameters

ipv6-addr
: Specifies the IPv6 address of a specified route in dotted-decimal notation.

mask
: Specifies the IPv6 mask of a specified route in CIDR notation.

neighbor
: Clears dampening statistics only for routes learned from the specified neighbor.

ipv6-addr
: Specifies the IPv6 address of the neighbor.

regular-expression
: Specifies a regular expression.

string
: Regular expression.

Modes

Privileged EXEC mode

Examples

The following example clears the dampening statistics for a BGP4+ route.

```
device# clear ipv6 bgp flap-statistics 2001:2002::23:61
```

clear ipv6 bgp local routes

Clears BGP4+ local routes from the IP route table and resets the routes.

Syntax

clear ipv6 bgp local routes

Modes

Privileged EXEC mode

Examples

The following example clears all BGP4+ local routes.

```
device> clear ipv6 bgp local routes
```

clear ipv6 bgp neighbor

Requests a dynamic refresh of BGP4+ connections or routes from a neighbor, with a variety of options.

Syntax

clear ipv6 bgp neighbor { **all** | *as-num* | *peer-group-name* | *iipv6-addr* } [**last-packet-with-error**] [**notification-errors**] [**soft** [**in** | **out**]] [**soft-outbound**] [**traffic**]

Parameters

all
Resets and clears all BGP4+ connections to all neighbors.

as-num
Clears all BGP4+ connections within this autonomous system. Range is from 1 through 4294967295.

peer-group-name
Clears all BGP4+ connections in this peer group. Range is from 1 through 63 characters.

ipv6-addr
Clears all BGP4+ connections with this IPv6 address, in dotted-decimal notation.

last-packet-with-error
Clears all BGP4+ connections identified as having the last packet received with an error.

notification-errors
Clears all BGP4+ connections identified as having notification errors.

soft
Refreshes routes received from or sent to the neighbor.

in
Refreshes received routes.

out
Refreshes sent routes.

soft-outbound
Refreshes all outbound routes by applying new or changed filters, but sends only the existing routes affected by the new or changed filters to the neighbor.

NOTE
Use **soft-outbound** only if the outbound policy is changed. This operand updates all outbound routes by applying the new or changed filters. However, the device sends to the neighbor only the existing routes that are affected by the new or changed filters. The **soft out** operand updates all outbound routes and then sends the entire BGP4+ route table on the device to the neighbor after the device changes or excludes the routes affected by the filters.

traffic
Clears the counters (resets them to 0) for BGP4+ messages.

Modes

Privileged EXEC mode

Examples

The following example refreshes all BGP4+ neighbor connections.

```
device# clear ipv6 bgp neighbor all
```

clear ipv6 bgp routes

Clears BGP4+ routes from the route table and resets the routes.

Syntax

clear ipv6 bgp routes [*ipv6-addr* { **/** *mask* }]

Parameters

ipv6-addr

Specifies the IPv6 address of a specified route in dotted-decimal notation.

mask

Specifies the IPv6 mask of a specified route in CIDR notation.

Modes

Privileged EXEC mode

Examples

The following example clears all BGP4+ routes.

```
device> clear ipv6 bgp routes
```

clear ipv6 bgp traffic

Clears the BGP4+ message counter for all neighbors.

Syntax

clear ipv6 bgp traffic

Modes

Privileged EXEC mode

Examples

The following example clears the BGP4+ message counters.

```
device# clear ipv6 bgp traffic
```

clear ipv6 cache

Deletes all entries in the dynamic host IPv6 cache.

Syntax

clear ipv6 cache [**vrf** *vrf-name*] [*ipv6-address* | *ipv6-prefix/prefix-length* | **ethernet** *unit/slot/port* | **lag** *lag-id* | **tunnel** *tunnel-id* | **ve** *ve-number*]

Parameters

vrf *vrf-name*
: Removes cache entries for the specified VPN Routing/Forwarding (VRF) instance.

ipv6-address
: Removes cache entries for the specified IPv6 address.

ipv6-prefix/prefix-length
: Removes cache entries for the specified IPv6 prefix.

ethernet *unit/slot/port*
: Removes cache entries for the specified Ethernet interface.

tunnel *tunnel-id*
: Removes cache entries for the specified tunnel interface.

lag *lag-id*
: Specifies the LAG virtual interface.

ve *ve-number*
: Removes cache entries for the specified Virtual Ethernet (VE) interface.

Modes

Privileged EXEC mode

Usage Guidelines

You can remove all entries from the IPv6 cache or specify an entry based on the IPv6 prefix, IPv6 address, or interface type.

You must specify the *ipv6-prefix* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. You must specify the *prefix-length* parameter as a decimal value. A slash mark (/) must follow the *ipv6-prefix* parameter and precede the *prefix-length* parameter.

You must specify the *ipv6-address* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373.

Examples

The following example removes entries for IPv6 address 2000:e0ff::1.

```
device# clear ipv6 cache 2000:e0ff::1
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

clear ipv6 dhcp-relay delegated-prefixes

Clears the IPv6 DHCP relay delegated prefixes.

Syntax

clear ipv6 dhcp-relay delegated-prefixes { **vrf** *vrf-name* | **X:X::X:X/M** | **all** | **interface** *interface-id* }

Parameters

vrf *vrf-name*

Clears the DHCPv6 delegated prefixes for a specific VRF. If this parameter is not provided, then the information for the default VRF is cleared

X:X::X:X/M

Clears the specified delegated prefix and removes the corresponding route permanently from the router.

all

Clear all the delegated prefixes and remove the corresponding routes permanently from the router for the VRF

interface *interface-id*

Clears all the delegated prefixes and removes the corresponding routes permanently from the router for the specified outgoing interface.

Modes

Privileged EXEC mode

Examples

The following example clears the IPv6 DHCP relay delegated prefixes from VRF1.

```
device# clear ipv6 dhcp-relay delegated-prefixes vrf VRF1
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 8.0.30 and later releases.

clear ipv6 dhcp-relay statistics

Clears the IPv6 DHCP packet counters.

Syntax

clear ipv6 dhcp-relay statistics

Modes

Privileged EXEC mode

Examples

The following example clears the IPv6 DHCP packet counters.

```
device# clear ipv6 dhcp-relay statistics
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 8.0.30 and later releases.

clear ipv6 dhcp6 snooping

Clears the IPv6 DHCP snooping database.

Syntax

clear ipv6 dhcp6 snooping *vlan*

Parameters

vlan

Specifies the VLAN.

Modes

Global configuration mode

User EXEC mode

Usage Guidelines

You can remove all entries in the database, or remove entries for a specific IP address only.

Examples

The following command clears the IPv6 entries in the database.

```
device# clear ipv6 dhcp6 snooping
```

clear ipv6 mld traffic

Clears the counters on IPv6 multicast listening discovery (MLD) traffic.

Syntax

clear ipv6 mld [**vrf** *vrf-name*] **traffic**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

traffic

Clears the traffic counters.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears traffic counters for all VRF instances.

Examples

The following example clears counters on IPv6 PIM traffic.

```
device# clear ipv6 mld traffic
```

clear ipv6 mroute

Removes IPv6 multicast routes from the IPv6 multicast routing table.

Syntax

clear ipv6 mroute [**vrf** *vrf-name*] [*ipv6-address-prefix/prefix-length*]

Parameters

vrf *vrf-name*

Specifies a VRF route.

ipv6-address-prefix/prefix-length

Specifies an IPv6 address prefix in hexadecimal using 16-bit values between colons as documented in RFC 2373 and a prefix length as a decimal value.

Modes

Privileged EXEC mode

Usage Guidelines

After mroutes are removed from an IPv6 multicast routing table, the best static mroutes are added back to it.

Examples

The following example removes all mroutes from the IPv6 multicast routing table:

```
Device(config)# clear ipv6 mroute
```

The following example removes all mroutes from the vrf green IPv6 multicast routing table:

```
Device(config)# clear ipv6 mroute vrf green
```

The following example removes mroute 2000:7838::/32 from the IPv6 multicast routing table:

```
Device(config)# clear ipv6 mroute 2000:7838::/32
```

History

Release version	Command history
08.0.10a	This command was introduced.

clear ipv6 multicast counters

Clears multicast listening discovery (MLD) snooping error and traffic counters on all VLANs.

Syntax

clear ipv6 multicast counters

Modes

Privileged EXEC mode

Examples

The following example clears MLD snooping on error and traffic counters for all VLANs.

```
device# clear ipv6 multicast counters
```

clear ipv6 multicast mcache

Clears the multicast listening discovery (MLD) mcache on a specific VLAN or on all VLANs.

Syntax

clear ipv6 multicast [**vlan** *vlan-id*] **mcache** [*ipv6-addr*]

Parameters

vlan *vlan-id*

Specifies a VLAN.

mcache

Clears the mcache on the specified VLANs.

ipv6-addr

Specifies a source or a group to clear. If you do not specify a source or group, all cache entries are cleared.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vlan** keyword, this command clears information for all VLANs.

Examples

The following example clears the mcache on VLAN 20.

```
device# clear ipv6 multicast vlan 20 mcache
```

clear ipv6 multicast traffic

Clears multicast listening discovery (MLD) traffic counters on a specific VLAN or on all VLANs.

Syntax

clear ipv6 multicast [**vlan** *vlan-id*] **traffic**

Parameters

vlan *vlan-id*

Specifies a VLAN.

traffic

Clears traffic counters on the specified VLANs.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vlan** keyword, this command clears information for all VLANs.

Examples

The following example clears traffic counters on VLAN 20.

```
device# clear ipv6 multicast vlan 20 traffic
```

clear ipv6 neighbor

Removes entries from the IPv6 neighbor table.

Syntax

clear ipv6 neighbor [**vrf** *vrf-name*] { **ethernet** *unit/slot/port* | **lag** *lag-id* | **ve** *ve-number* } [**dynamic** | **incomplete** | **stale** | **static**]

clear ipv6 neighbor [**vrf** *vrf-name*] [*ipv6-address* | *ipv6-prefix/prefix-length* | **incomplete** | **inspection statistics** | **stale** | **statistics**]

Parameters

vrf *vrf-name*
: Removes entries from the IPv6 neighbor table for the specified VPN Routing/Forwarding (VRF) instance.

ethernet *unit/slot/port*
: Removes cache entries for the specified Ethernet interface.

lag *lag-id*
: Removes entries for the specified Link Aggregation Group (LAG).

ve *ve-number*
: Removes cache entries for the specified Virtual Ethernet (VE) interface.

dynamic
: Clears dynamically learned IPv6 neighbors.

incomplete
: Clears IPv6 neighbors in an incomplete state.

stale
: Clears IPv6 neighbors in a stale state.

static
: Clears statically configured IPv6 neighbors.

ipv6-address
: Removes cache entries for the specified IPv6 address.

ipv6-prefix/prefix-length
: Removes cache entries for the specified IPv6 prefix.

inspection statistics
: Clears dynamic ND inspection entries.

statistics
: Clears ND inspection statistics.

Modes

Privileged EXEC mode

Usage Guidelines

You must specify the *ipv6-prefix* parameter in hexadecimal using 16-bit values between colons, as documented in RFC 2373. You must specify the *prefix-length* parameter as a decimal value. A slash mark (/) must follow the *ipv6-prefix* parameter and precede the *prefix-length* parameter.

You must specify the *ipv6-address* parameter in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

Examples

The following example removes neighbor entries for Ethernet interface 1/3/1.

```
device# clear ipv6 neighbor ethernet 1/3/1
```

The following example clears IPv6 neighbor entries that are in a stale state.

```
device# clear ipv6 neighbor stale
```

The following example clears IPv6 neighbor entries that are in a stale state for a specified VE interface.

```
device# clear ipv6 neighbor ve 20 stale
```

The following example clears IPv6 neighbor entries that are in an incomplete state.

```
device# clear ipv6 neighbor incomplete
```

The following example clears IPv6 neighbor entries that are in an incomplete stale state for a specified Ethernet interface.

```
device# clear ipv6 ethernet 1/1/1 incomplete
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.
08.0.95	The **dynamic**, **incomplete**, **stale**, **static**, **statistics**, and **inspection statistics** keywords were added.

clear ipv6 neighbor inspection

Clears the static neighbor discovery (ND) inspect entries and ND inspection statistics.

Syntax

clear ipv6 neighbor [**vrf** *vrf-name*] **inspection** [**static-entry** | **statistics**]

Parameters

vrf
: Specifies the VRF instance (optional).

vrf-name
: Specifies the ID of the VRF instance required with **vrf** .

inspection
: Specifies that the neighbor discovery messages are verified against the static ND inspection entries or dynamically learned DHCPv6 snoop entries.

static-entry
: Clears the manually configured static ND inspect entries that are used to validate the packets received on untrusted ports.

statistics
: Clears the total number of neighbor discovery messages received and the number of packets discarded after ND inspection.

Modes

Privileged EXEC mode

Global configuration mode

VRF configuration mode

Usage Guidelines

This command can be used in three different modes as shown in the examples. If used without specifying a VRF, this command clears data from the default VRF.

Examples

The following example removes the manually configured static ND inspect entries.

```
device# clear ipv6 neighbor inspection static-entry
```

The following example removes the manually configured static ND inspect entries on a VRF.

```
device# configure terminal
device(config)# vrf vrf2
device(config-vrf-vrf2)# clear ipv6 neighbor vrf vrf2 inspection static-entry
```

The following example deletes the ND inspection statistics.

```
device# configure terminal
device(config)# clear ipv6 neighbor inspection statistics
```

The following example deletes the ND inspection statistics on a VRF.

```
device# configure terminal
device(config)# clear ipv6 neighbor vrf vrf2 inspection statistics
```

History

Release version	Command history
08.0.20	This command was introduced.

clear ipv6 ospf

Clears OSPFv3 data processes, counts, force-spf, neighbors, redistribution, routes, and traffic.

Syntax

clear ipv6 ospf all

clear ipv6 ospf counts

clear ipv6 ospf counts neighbor *A.B.C.D*

clear ipv6 ospf counts neighbor interface { **ethernet** *unit/slot/port* | **lag** *lag-id* | **tunnel** *number* | **ve** *vlan_id* } [*A.B.C.D*]

clear ipv6 ospf { **force-spf** | **redistribution** | **traffic** } [**vrf** *vrf-name*]

clear ipv6 ospf neighbor all

clear ipv6 ospf neighbor interface { **ethernet** *unit/slot/port* | **lag** *lag-id* | **tunnel** *number* | **ve** *vlan_id* } [*A.B.C.D*]

clear ipv6 ospf routes { *IPv6addr* | **all** }

Parameters

all
Clears all OSPFv3 data.

counts
Clears OSPFv3 counters.

neighbor
Clears all OSPF counters for a specified neighbor.

A.B.C.D
Specifies a neighbor.

interface
Specifies an interface.

ethernet *unit/slot/port*
Specifies the Ethernet interface and the interface ID in the format unit/slot/port.

lag *lag-id*
Specifies the LAG virtual interface.

tunnel *number*
Specifies a tunnel interface.

ve *vlan_id*
Specifies a virtual Ethernet (VE) interface.

force-spf
Performs the shortest path first (SPF) calculation without clearing the OSPFv3 database.

redistribution
Clears OSPFv3 redistributed routes.

traffic
Clears OSPFv3 traffic statistics.

routes

Clears OSPFv3 routes.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **force-spf** keyword to perform the shortest path first (SPF) calculation without clearing the OSPFv3 database.

Examples

The following example restarts the OSPFv3 processes.

```
device# clear ipv6 ospf all
```

The following example clears all OSPFv3 counters for a specified neighbor.

```
device# clear ipv6 ospf counts neighbor 10.10.10.1
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

clear ipv6 pim cache

Clears the IPv6 PIM forwarding cache.

Syntax

clear ipv6 pim [**vrf** *vrf-name*] **cache** *ipv6-address*

Parameters

vrf *vrf-name*

Specifies a VRF instance.

cache *ipv6-address*

Specifies group or address of the PIM forwarding cache to clear.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears information for all VRF instances.

Examples

This example shows how to clear the IPv6 PIM forwarding cache:

```
Device#clear ipv6 pim cache 2001:0DB8:0:1::1/120 5100::192:1:1:1
```

clear ipv6 pim counters

Clears IPv6 PIM message counters.

Syntax

clear ipv6 pim [**vrf** *vrf-name*] **counters**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

counters

Specifies the IPv6 PIM message counters.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears information for all VRF instances.

Examples

Thi example shows how to clear the IPv6 PIM message counters:

```
Device#clear ipv6 pim counters
```

clear ipv6 pim hw-resource

Clears the IPv6 PIM hardware resource fail count for a specific VRF instance or for all VRFs.

Syntax

clear ipv6 pim hw-resource

Parameters

vrf *vrf-name*

Specifies a VRF instance.

hw-resource

Specifies hardware resource fail count.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears the PIM hardware resource fail count for all VRFs.

Examples

The following example clears the IPv6 PIM hardware resource fail count.

```
Device# clear ipv6 pim hw-resource
```

clear ipv6 pim rp-map

Clears the entries in an IPv6 PIM Sparse static multicast forwarding table, allowing a new rendezvous point (RP) configuration to be effective immediately.

Syntax

clear ipv6 pim [**vrf** *vrf-name*] **rp-map**

Parameters

vrf *vrf-name*
Specifies a VRF instance.

rp-map
Specifies the entries in a PIM sparse static multicast forwarding table.

Modes

Privileged EXEC mode

Usage Guidelines

Configuring this command clears and overwrites the static RP configuration. If you change the static RP configuration, the entries in the IPv6 PIM Sparse multicast forwarding table continue to use the old RP configuration until they are aged out. You can configure the **clear ipv6 pim rp-map** command to update the entries in the static multicast forwarding table immediately after making RP configuration changes.

This command is meant to be used with the **rp-address** command.

Examples

This example shows how to clear the entries in an IPv6 PIM Sparse static multicast forwarding table after you change the RP configuration:

```
Device#clear ipv6 pim rp-map
```

clear ipv6 pim traffic

Clears counters on IPv6 PIM traffic.

Syntax

clear ipv6 pim [**vrf** *vrf-name*] **traffic**

Parameters

vrf *vrf-name*

Specifies a VRF instance.

traffic

Specifies counters on IPv6 PIM traffic.

Modes

Privileged EXEC mode

Usage Guidelines

When entered without the **vrf** keyword, this command clears counters for all VRF instances.

Examples

This example shows how to clear IPv6 PIM traffic counters on all VRF instances:

```
Device#clear ipv6 pim traffic
```

clear ipv6 pimsm-snoop

Clears PIM sparse mode (SM) information.

Syntax

clear ipv6 pimsm-snoop [**vlan** *vlan-id*] { **cache** [*ipv6-address*] | **stats**}

Parameters

vlan*vlan-id*

Specifies clearing information on a specific VLAN.

cache

Specifies clearing the PIM SM snooping cache.

ipv6-address

Specifies clearing PIM SM snooping-cache information on a specific source or group.

stats

Specifies clearing traffic and error counters.

Modes

Global configuration mode

Examples

The following example clears PIM SM information from all VLANs.

```
Device(config)# clear ipv6 pimsm-snoop cache
```

The following example clears PIM SM information from a specific VLAN.

```
Device(config)# clear ipv6 pimsm-snoop vlan 10 cache
```

The following example clears PIM SM information from a specific source.

```
Device(config)# clear ipv6 pimsm-snoop cache ff05::100
```

The following example clears traffic and error counters from all VLANs.

```
Device(config)# clear ipv6 pimsm-snoop stats
```

History

Release version	Command history
08.0.20	This command was introduced.

clear ipv6 raguard

Resets the drop or permit packet counters for Router Advertisement (RA) guard policies.

Syntax

clear ipv6 raguard { *name* | **all** }

Parameters

name

An ASCII string indicating the name of the RA guard policy of which the packet counters must be cleared.

all

Clears the packet counters of all RA guard policies.

Modes

Global configuration mode

Usage Guidelines

To clear RA guard packet counters for all RA guard policies, use the **all** keyword. To clear the RA guard packet counters for a specific RA guard policy, specify the *name* of the policy.

Examples

The following example clears the packet count for an RA guard policy:

```
device(config)# clear ipv6 raguard policy1
```

The following example clears the packet counters for all RA guard policies:

```
device(config)# clear ipv6 raguard all
```

clear ipv6 rip route

Clears all RIPng routes from the RIPng route table and the IPv6 main route table and resets the routes.

Syntax

clear ipv6 rip route

Modes

Privileged EXEC mode or any configuration mode

Examples

The following example clears all RIPng routes.

```
device# clear ipv6 rip route
```

clear ipv6 route

Clears IPv6 routes.

Syntax

clear ipv6 route [**vrf** *vrf-name*] [*ipv6-prefix/prefix-length*]

Parameters

vrf *vrf-name*

Removes IPv6 routes for the specified VPN Routing/Forwarding (VRF) instance.

ipv6-prefix/prefix-length

Removes IPv6 routes for the specified IPv6 prefix.

Modes

Privileged EXEC mode

Usage Guidelines

The *ipv6-prefix/prefix-length* parameter clears routes associated with a particular IPv6 prefix. You must specify the *ipv6-prefix* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. You must specify the *prefix-length* parameter as a decimal value. A slash mark (/) must follow the *ipv6-prefix* parameter and precede the *prefix-length* parameter.

NOTE

The L2 and L3 protocols might flap in case the number of L3 routes are more.

Examples

The following example clears IPv6 routes associated with the prefix 2000:7838::/32.

```
device# clear ipv6 route 2000:7838::/32
```

clear ipv6 traffic

Clears IPv6 traffic statistics (resets all fields to zero).

Syntax

clear ipv6 traffic

Modes

Privileged EXEC mode

Examples

The following example clears the IPv6 traffic statistics.

```
device# clear ipv6 traffic
```

clear ipv6 tunnel

Clears statistics (resets all fields to zero) for all IPv6 tunnels or for a specific tunnel.

Syntax

clear ipv6 tunnel [*number*]

Parameters

number

Specifies the tunnel number.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

You can use the **show ipv6 tunnel** command to verify the results of issuing the **clear ipv6 tunnel**command.

Examples

The following example clears statistics for tunnel 1.

```
device(config)# clear ipv6 tunnel 1
```

clear ipv6 tunnel stat

Clears counters for IPv6 tunnel traffic.

Syntax

clear ipv6 tunnel stat *number*

Parameters

number

Specifies the tunnel number.

Modes

Privileged EXEC mode

Usage Guidelines

This command can be entered in privileged EXEC mode and in any configuration mode. Use the **show ipv6 tunnel traffic** command to verify the results of using this command.

Examples

The following example clears IPv6 tunnel statistics.

```
device# show ipv6 tunnel traffic

IPSEC Tunnels
 Tunnel Status Packet Received Packet Sent Bytes Received Bytes Sent
 1 up/up 85533517 42780261 360799665060 180384879800
 9 up/up 37985 45674 8079286 9180316
 18 up/up 29805 29531 6688206 6436010

device# clear ipv6 tunnel stat

device# show ipv6 tunnel traffic

IPSEC Tunnels
 Tunnel Status Packet Received Packet Sent Bytes Received Bytes Sent
 1 up/up 0 0 0 0
 9 up/up 0 0 0 0
 18 up/up 0 0 0 0
```

History

Release version	Command history
08.0.70	This command was introduced.

clear ipv6 vrrp statistics

Clears IPv6 Virtual Router Redundancy Protocol (VRRP) statistics.

Syntax

clear ipv6 vrrp statistics

Modes

Privileged EXEC mode

Usage Guidelines

This command can be entered in privileged EXEC mode and in any configuration mode. Entering the command in a configuration mode can be useful if you are configuring IPv6 VRRP options, for example, and want to clear existing VRRP statistics.

Examples

The following example clears IPv6 VRRP statistics when entered in privileged EXEC mode.

```
device# clear ipv6 vrrp statistics
```

The following example clears IPv6 VRRP statistics when entered in VRID interface configuration mode.

```
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ipv6 vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# clear ipv6 vrrp statistics
```

clear ipv6 vrrp-extended statistics

Clears IPv6 Virtual Router Redundancy Protocol (VRRP) Extended (VRRP-E) statistics.

Syntax

clear ipv6 vrrp-extended statistics

Modes

Privileged EXEC mode

Usage Guidelines

This command can be entered in privileged EXEC mode and in any configuration mode. Entering the command in a configuration mode can be useful if you are configuring IPv6 VRRP-E options, for example, and want to clear existing VRRP-E statistics.

Examples

The following example clears IPv6 VRRP-E statistics when entered in privileged EXEC mode.

```
device# clear ipv6 vrrp-extended statistics
```

The following example clears IPv6 VRRP-E statistics when entered in VRID interface configuration mode.

```
device(config)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ipv6 2001:DB8::2/24
device(config-if-e1000-1/1/5)# ipv6 vrrp-extended vrid 2
device(config-if-e1000-1/1/5-vrid-2)# clear ipv6 vrrp-extended statistics
```

clear link-keepalive statistics

Clears the UDLD statistics.

Syntax

clear link-keepalive statistics

Modes

Privileged EXEC mode

Global configuration mode

Usage Guidelines

This command clears the Packets sent, Packets received, and Transitions counters in the **show link-keepalive ethernet** command output.

Examples

The following example shows how to clear the UDLD port statistics.

```
device# clear link-keepalive statistics
```

clear link-oam statistics

Clears EFM-OAM statistics from all EFM-OAM-enabled interfaces.

Syntax

clear link-oam statistics

Modes

Privileged EXEC mode

Global configuration mode

EFM-OAM protocol configuration mode

Examples

The following example clears EFM-OAM statistics from all EFM-OAM-enabled interfaces.

```
device(config)# clear link-oam statistics
```

History

Release version	Command history
08.0.30	This command was introduced.

clear lldp neighbors

Clears cached LLDP neighbor information.

Syntax

clear lldp neighbors [**ports** { **all** | **ethernet** *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...] }]

Parameters

ports
Clears LLDP neighbor information for ports.

all
Clears LLDP neighbor information for all LLDP capable ports.

ethernet *stackid/slot/port*
Clears LLDP neighbor information for the specified Ethernet interface.

to *stackid/slot/port*
Clears LLDP neighbor information for a range of Ethernet interfaces.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

The device clears cached LLDP neighbor information after a port becomes disabled and the LLDP neighbor information ages out. However, if a port is disabled and then re-enabled before the neighbor information ages out, the device will clear the cached LLDP neighbor information when the port is re-enabled.

Examples

The following example clears the cached LLDP neighbor information for a specific port.

```
device# clear lldp neighbors ports ethernet 1/1/10
```

The following example clears the cached LLDP neighbor information for all ports.

```
device# clear lldp neighbors ports all
```

clear lldp statistics

Clears the global and per-port LLDP neighbor statistics on the device.

Syntax

clear lldp statistics [**all** | **ports** { **all** | **ethernet** *stack-id/slot/port* [**to** *stack-id/slot/port* | [**ethernet** *stack-id/slot/port* **to** *stack-id/slot/port* | **ethernet** *stack-id/slot/port*]...] }]

Parameters

all
Clears LLDP neighbor statistics for all LLDP-capable ports.

ports
Clears LLDP neighbor statistics for ports.

all
Clears LLDP neighbor statistics for all Ethernet interfaces.

ethernet *stack-id/slot/port*
Clears LLDP neighbor statistics for the specified Ethernet interface.

to *stack-id/slot/port*
Clears LLDP neighbor statistics for a range of Ethernet interfaces.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example clears the LLDP neighbor statistics for all ports.

```
device# clear lldp statistics ports all
```

clear logging

Clears the log entries from the dynamic buffer, the static buffer, or the local buffer.

Syntax

clear logging [**dynamic-buffer** | **static-buffer**]

Parameters

dynamic-buffer

Clears log entries from the dynamic buffer.

static-buffer

Clears log entries from the static buffer.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example clears the syslog messages stored in the local buffer.

```
device# clear logging
```

The following example clears the log entries from the dynamic buffer.

```
device# clear logging dynamic-buffer
```

clear loop-detection

Clears loop detection statistics and enables all Err-Disabled ports.

Syntax

clear loop-detection

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example clears loop detection statistics and enables all Err-Disabled ports.

```
device(config)# clear loop-detection
```

clear l2protocol dot1q-tunnel counters

Clears all Q-in-Q BPDU tunnel counters.

Syntax

clear l2protocol dot1q-tunnel counters [*unit / slot / port* | *lag-id*]

Parameters

unit / slot / port

Specifies the interface from which the tunnel counters are to be cleared.

lag-id

Specifies the LAG virtual interface from which the tunnel counters are to be cleared.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

If interfaces are not specified, the Q-in-Q BPDU tunnel counters are cleared for all interfaces.

Examples

The following example clears all Q-in-Q BPDU tunnel counters.

```
device# clear l2protocol dot1q-tunnel counters
```

History

Release version	Command history
08.0.70	The command was introduced.

clear mac-address

Clears the MAC addresses.

Syntax

clear mac-address[*mac-address*|**ethernet***unit/slot/port*|**lag***lag-id*|**mdup-stats**|**vlan***vlan-id*|**vxlan**{**gw***gw-name***site***site-name*|**vni***vni-id*}]

Parameters

mac-address
Clears entries in all VLANs with the specified MAC address.

ethernet*unit/slot/port*
Clears the entries on the specified port.

lag*lag-id*
Specifies the LAG virtual interface.

mdup-stats
Clears MAC database update statistics.

vlan*vlan-id*
Clears all entries in a VLAN.

vxlan
Clears VXLAN-specific MAC entries.

gw*gw-name*
Specifies the VXLAN gateway name for which information needs to be cleared.

site*site-name*
Clears information for the specified remote site.

vni*vni-id*
Clears information for the designated VXLAN Network Identifier.

Modes

Privileged EXEC mode

Global configuration mode

Cluster configuration mode

Examples

The following example shows how to clear the MAC address of a specific VLAN.

```
device# clear mac-address vlan 2
```

The following example shows how to clear all MAC addresses in the system.

```
device# clear mac-address
```

History

Release version	Command history
08.0.40	The **mdup-stats** option was removed as it was supported only on FSX devices.
08.0.61	This command was modified to add **lag***lag-id* options.

clear mac-address cluster

Clears cluster-specific MAC addresses.

Syntax

clear mac-address cluster { *cluster-name* | *cluster-id* } [**vlan** *vlan-id*] [**client** [*client-name*]] [**local** | **remote**]

Parameters

cluster-name
: Clears the cluster MAC address entries for the cluster identified by the cluster name.

cluster-id
: Clears the cluster MAC address entries for the cluster identified by the cluster ID.

vlan *vlan-id*
: Clears the VLAN ID for which you want to clear the MAC address.

client *client-name*
: Clears cluster client MAC address entries.

local
: Clears the MAC addresses local to the cluster.

remote
: Clears the MAC addressses remote to the cluster.

Modes

Privileged EXEC mode

Global configuration mode

Cluster configuration mode

Examples

The following example shows how to clear cluster-specific MAC addresses.

```
device# clear mac-address cluster AGG-1 local
```

The following example shows how to clear a MAC address for cluster client for a specific VLAN ID.

```
device# clear mac-address cluster AGG-1 vlan 1 local
```

The following example shows how to clear MAC address for cluster client.

```
device# clear mac-address cluster AGG-1 vlan 2 client 1 local
```

clear mac-authentication sessions

Clears MAC authentication sessions.

Syntax

clear mac-authentication sessions { **mac-address** *mac-address* | **stack-unit** *id* | **ethernet** *device/slot/port* }

Parameters

mac-address

Specifies the mac-address from which the MAC authentication sessions are to be cleared.

stack-unit *id*

Specifies the stack unit from which the MAC authentication sessions are to be cleared.

ethernet *device/slot/port*

Specifies the interface from which the MAC authentication sessions are to be cleared.

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to clear the MAC authentication sessions for either a specified MAC address or an ethernet interface.

Examples

The following example clears the MAC authentication session for the specified MAC address.

```
device# clear mac-authentication sessions 0000.0034.abd4
```

The following example clears the MAC authentication session sessions on an interface.

```
device# clear mac-authentication sessions ethernet 1/1/1
```

The following example clears the MAC authentication sessions.

```
device# clear mac-authentication sessions
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	The command was modified to include the **stack-unit** option.

clear mac-authentication statistics

Clears MAC authentication statistics

Syntax

clear mac-authentication statistics { **stack-unit** *id* | **ethernet** *device/slot/port* }

Parameters

stack-unit *id*

Specifies the stack unit from which the MAC authentication statistics are to be cleared.

ethernet *device/slot/port*

Specifies the interface from which the MAC authentication statistics are to be cleared.

Modes

Privileged EXEC mode

Examples

The following example clears MAC authentication statistics for stack unit 3.

```
device# clear mac-authentication statictics stack-unit 3
```

History

Release version	Command history
08.0.70	The command was modified to include the **stack-unit** option.

clear macsec statistics

Clears the MACsec traffic statistics for the specified interface.

Syntax

clear macsec statistics ethernet *unit/slot/port*

Parameters

ethernet *unit/slot/port*

Specifies an interface by device position in stack, slot on the device, and interface on the slot.

Modes

Privileged EXEC mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

Examples

In the following example, MACsec traffic statistics are cleared for interface 1/3/4 (port 4 of slot 3 on the first device in the stack).

```
device# clear macsec statistics ethernet 1/3/4
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

clear management-vrf-stats

Clears the management Virtual Routing and Forwarding (VRF) rejection statistics.

Syntax

clear management-vrf-stats

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface management configuration mode

Usage Guidelines

You can use the **show management-vrf** command to verify the result of issuing the **clear management-vrf-stats** command.

Examples

The following example clears the management VRF rejection statistics.

```
device(config)# clear management-vrf-stats
```

clear mvrp statistics

Clears the Multiple VLAN Registration Protocol (MVRP) event and packet statistics.

Syntax

clear mvrp statistics [**ethernet** *unit/slot/port* | **lag** *lag-id*]

Parameters

ethernet *unit/slot/port*

Clears MVRP statistics of the specified port.

lag *lag-id*

Clears MVRP statistics of the specified LAG interface.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

LAG configuration mode

Examples

The following example clears the MVRP event and packet statistics.

```
device(config)# clear mvrp statistics
```

History

Release version	Command history
08.0.90	This command was introduced.

clear mstp statistics

Clears the Multiple Spanning Tree Protocol (MSTP) statistics.

Syntax

clear mstp statistics instance *instance-id*

Parameters

instance *instance-id*

Specifies the MSTP instance.

Modes

Privileged EXEC mode

Examples

The following example clears the MSTP statistics from instance 0.

```
device# show mstp detail
  detail          displays detailed mstp information
device# show mstp detail 0
MSTP Instance 0 (CIST) - VLANs: 1
--------------------------------------------------------------------------------
  Bridge: 800000a0c9c002a0 [Priority 32768, SysId 0, Mac 00a0c9c002a0]
  FwdDelay 15, HelloTime 2, MaxHops 20, TxHoldCount 6, ForceVersion 3
Number of topology changes: 37
Last topology change occured 13 minute(s) 46 second(s)  ago on lg30

Port 1/1/1 - Role: DESIGNATED - State: FORWARDING
  PathCost 20000, Priority 128, OperEdge F, OperPt2PtMac F, rcvdInternal F, Boundary F
  Designated   - Root 800000a0c9c002a0, RegionalRoot 800000a0c9c002a0,
                 Bridge 800000a0c9c002a0, ExtCost 0, IntCost 0
  ActiveTimers - helloWhen 1
  MachineState - PRX-DISCARD, PTX-IDLE, PPM-SENDING_RSTP, PIM-CURRENT
                 PRT-ACTIVE_PORT, PST-FORWARDING, TCM-ACTIVE
  BPDUs        - Rcvd MST 0, RST 0, Config 0, TCN 0
                 Sent MST 566, RST 0, Config 0, TCN 0

device# clear mstp statistics instance 0
device#
device# show mstp detail 0
MSTP Instance 0 (CIST) - VLANs: 1
--------------------------------------------------------------------------------
  Bridge: 800000a0c9c002a0 [Priority 32768, SysId 0, Mac 00a0c9c002a0]
  FwdDelay 15, HelloTime 2, MaxHops 20, TxHoldCount 6, ForceVersion 3
Number of topology changes: 0

Port 1/1/1 - Role: DESIGNATED - State: FORWARDING
  PathCost 20000, Priority 128, OperEdge F, OperPt2PtMac F, rcvdInternal F, Boundary F
  Designated   - Root 800000a0c9c002a0, RegionalRoot 800000a0c9c002a0,
                 Bridge 800000a0c9c002a0, ExtCost 0, IntCost 0
  ActiveTimers - helloWhen 1
  MachineState - PRX-DISCARD, PTX-IDLE, PPM-SENDING_RSTP, PIM-CURRENT
                 PRT-ACTIVE_PORT, PST-FORWARDING, TCM-ACTIVE
  BPDUs        - Rcvd MST 0, RST 0, Config 0, TCN 0
                 Sent MST 578, RST 0, Config 0, TCN 0
```

History

Release version	Command history
10.0.00	This command was introduced.

clear notification-mac statistics

Clears the MAC-notification statistics, such as the number of trap messages and number of MAC notification events sent.

Syntax

clear notification-mac statistics

Command Default

The MAC-notification statistics are available on the device.

Modes

Global configuration

Privileged EXEC

Usage Guidelines

MAC notification statistics can be viewed using the **show notification-mac** display command.

Examples

The following example clears the MAC notification statistics:

```
device(config)# clear notification-mac statistics
```

History

Release version	Command history
08.0.10	This command was introduced.

clear openflow

Clears flows from the flow table.

Syntax

clear openflow { **flowid** *flow-id* | **all** }

Parameters

flowid *flow-id*

Clears the given flow ID that you want to delete from the flow table.

all

Deletes all flows from the flow table.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

When an OpenFlow rule or all flows in the flow table need to be deleted you can use the **clear openflow** command with the **all** option. To delete a single OpenFlow rule based on a flow-id, use the **clear openflow** command with the **flowid** *flow-id* options.

Examples

The following example clears the flow with an ID of 6.

```
device# clear openflow flowid 6
```

The following example clears all flows in the flow table.

```
device# clear openflow all
```

History

Release	Command History
08.0.20	This command was introduced.

clear overlay-gateway

Clears statistics for an entire VXLAN gateway tunnel or for a particular VNI.

Syntax

clear overlay-gateway *gateway-name* **site** *site-name* **network-counters**

clear overlay-gateway *gateway-name* **vnid** *vxlan-network-identifier* [**counters** | **ethernet** *unit/slot/port* **access-counters** | **lag** *lag-id* **access-counters**]

Parameters

gateway-name
Clears statistics for the specified VXLAN overlay-gateway.

site*site-name*
Clears statistics for the remote site specified.

network-counters
Clears network counters associated with this site.

vnid *vxlan-network-identifier*
Clears an overlay gateway's VNI counters.

counters
Clears VFI counters associated with this site.

ethernet *unit/slot/port*
Speccifies an Ethernet interface.

lag *lag-id*
Specifies a LAG interface.

Modes

Privileged EXEC mode

Examples

The following example clears the network counters for a site.

```
device# clear overlay-gateway 1 site mm2-site network-counters
Cleared the counters for the site !

device# show overlay-gateway 1 site mm2-site network-counters
------ The Network Counter Stats ------
     InUcastPkts: 0                          InUcastBytes: 0
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 0                    OutKnownUcastBytes: 0
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

The following example clears the VNI counters for an overlay-gateway.

```
device# clear overlay-gateway 1 vnid 30000 counters
Cleared the counters for VNI !

device# show overlay-gateway 1 vnid 30000 counters
------ The VNI Counter Stats ------
     InUcastPkts: 0                          InUcastBytes: 0
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 0                    OutKnownUcastBytes: 0
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

The following example clears the access counters for an Ethernet interface.

```
device# clear overlay-gateway 1 vnid 30000 ethernet 2/1/17 access-counters
Cleared the counters for the access counters !

device# show overlay-gateway 1 vnid 30000 ethernet 2/1/17 access-counters

------ The Access Counter Stats ------
     InUcastPkts: 0                          InUcastBytes: 0
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 0                    OutKnownUcastBytes: 0
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

The following example clears the access counters for a LAG interface.

```
device# clear overlay-gateway 1 vnid 30000 lag 2 access-counters
Cleared the counters for the access counters !

device#show overlay-gateway 1 vnid 30000 lag 2 access-counters

------ The Access Counter Stats ------
     InUcastPkts: 0                          InUcastBytes: 0
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 0                    OutKnownUcastBytes: 0
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

History

Release version	Command history
09.0.10b	The command was introduced for ICX 7550, ICX 7650, and ICX 7850 devices.

clear port security

Clears port security data.

Syntax

clear port security { **restricted-macs** | **statistics** } { **all** | **ethernet** *stack/slot/port* }

Parameters

restricted-macs
Clears all restricted MAC addresses globally.

statistics
Clears violation statistics globally.

all
Clears information for all ports.

ethernet *stack/slot/port*
Clears information for the specified Ethernet port.

Modes

Privileged EXEC mode

Global configuration mode

Port security configuration mode

Port security interface configuration mode

Examples

The following example clears all restricted MAC addresses globally.

```
device# clear port security restricted-macs all
```

The following example clears restricted MAC addresses on a specific port.

```
device# clear port security restricted-macs ethernet 1/1/1
```

The following example clears violation statistics globally.

```
device# clear port security statistics all
```

The following example clears violation statistics on a specific port.

```
device# clear port security statistics ethernet 1/1/1
```

clear pstat

Clears the CPU packet statistics counters.

Syntax

clear pstat

Modes

Global configuration mode

Examples

The following example shows the CPU packet statistics counters cleared using the **clear pstat** command.

```
device(config)# clear pstat
Pkt rx debug counters cleared.
```

History

Release version	Command history
08.0.90	This command was introduced.

clear public-key

Clears the authorized client public key from the buffer.

Syntax

clear public-key

Modes

Privileged EXEC mode

Global configuration mode

Examples

The following example clears the client public key from the buffer.

```
device# clear public-key
```

clear pvstplus-protect-statistics

Clears the statistics of the PVST+ Protect feature, configured by means of the **pvstplus-protect** command.

Syntax

clear pvstplus-protect-statistics [**ethernet** *unit/slot/port* [**to** *unit/slot/port*]]

clear pvstplus-protect-statistics [**lag** *lag-id*]

Parameters

ethernet
Specifies an Ethernet port.

unit/slot/port
Number of an Ethernet port. Ranging is allowed by means of the **to** keyword.

lag *lag-id*
Specifies the LAG virtual interface.

to
Enables optional ranging.

Modes

Privileged EXEC mode

Examples

This example clears the statistics of PVST+ Protect on all Ethernet interfaces, including the number of dropped PVST+ BPDUs.

```
device# clear pvstplus-protect-statistics
```

This example clears the statistics of PVST+ Protect on a single Ethernet interface.

```
device# clear pvstplus-protect-statistics ethernet 1/1/1
```

This example clears the statistics of PVST+ Protect on a range of Ethernet interfaces.

```
device# clear pvstplus-protect-statistics ethernet 1/1/1 to 1/1/4
```

History

Release version	Command history
08.0.30mb	This command was introduced.
08.0.61	This command was modified to add **lag** *lag-id* options.

clear rmon statistics

Clears remote monitoring statistics from the ICX device.

Syntax

clear rmon statistics

Command Default

By default, accumulated statistics are retained.

Modes

All modes

Usage Guidelines

Entering the **clear rmon statistics** command ensures that the most current rmon statistics are displayed by the **show rmon statistics** command.

Examples

The following example clears all remote monitoring statistics from the ICX device.

```
device# clear rmon statistics
```

History

Release version	Command history
08.0.95	This command was introduced.
09.0.00	This command was deprecated.
09.0.10c	Support for this command was restored.

clear span statistics

Clears the Spanning Tree Protocol (STP) statistics for a VLAN.

Syntax

clear span statistics vlan *vlan-id*

Parameters

vlan *vlan-id*

Specifices the VLAN.

Modes

Privileged EXEC mode

Examples

The following example clears STP statistics from VLAN 1.

```
device# clear span statistics vlan 1
device# show span detail vlan 1 lag 40
========================================================================
VLAN 1 - SPANNING TREE (IEEE 802.1D) ACTIVE
========================================================================
Bridge identifier    - 0x800000a0c9c002a0
Active global timers - Hello: 0
Topology change not set, Topology change detected not set, Topology change time 35
Number of topology changes: 0


Port lg40 is FORWARDING
  Port - Path cost: 4, Priority: 128, Port Identifier:128.3111, Root: 0x800000a0c9c002a0 Root Bridge
Priority:32768
  Designated - Bridge: 0x800000a0c9c002a0, Priority:32768, Interface: 3111, Identifier:128.3111, Path
cost: 0
  Active Timers - Hold: 0
  BPDUs - Sent: 1916, Received: 4464
```

History

Release version	Command history
10.0.00	This command was introduced.

clear stack ipc

Clears stack traffic statistics.

Syntax

clear stack ipc

Command Default

Stack traffic statistics are collected and retained.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **clear stack ipc** command before issuing the **show stack ipc** command. This helps to ensure that the data are the most recent traffic statistics for the stack.

This command must be executed from the active stack controller.

Examples

The following example clears stack traffic statistics prior to using the **show stack ipc** command to display current stack traffic statistics.

```
device# clear stack ipc
device# show stack ipc
V15, G1, Recv: SkP0:3749372, P1:3756064, MAIL:184291175, sum:191796611, t=457152.2
Message types have callbacks:
1 :Reliable IPC message 2 :Reliable IPC atomic 4 :fragmentation, jumbo
5 :probe by mailbox 6 :rel-mailbox 7 :test ipc
8 :disable keep-alive 9 :register cache 10:ipc dnld stk
11:chassis operation 12:ipc stk boot 13:Rconsole IPC message
14:auth msg 15:ipc erase flash 16:unconfigure
17:ipc stk boot 18:ss set 19:sFlow IPC message
21:SYNC download reques 23:SYNC download 1 spec 28:SYNC client hello
30:SYNC dy chg error 32:active-uprintf 33:test auth msg
34:probe KA 39:unrel-mailbox 40:trunk-probe
Send message types:
[1]=2342639, [4]=44528, [5]=961830, [6]=37146,
[9]=73104634, [11]=137082, [14]=487007, [20]=2304,
[22]=1395, [25]=23, [26]=1901701, [29]=415888,
[34]=1827543, [39]=30451, [40]=289420,
Recv message types:
[1]=2016251, [4]=1352759, [5]=470884, 475144,
[6]=114459, 114572, [9]=367644144, [11]=1785229,
[14]=973285, 974177, [21]=1395, [30]=25,
[34]=912972, 914086, [39]=973492, 973440, [40]=700313,
Statistics:
send pkt num : 34068433, recv pkt num : 191796609,
send msg num : 79756048, recv msg num : 379902767,
send frag pkt num : 22264, recv frag pkt num : 493860,
pkt buf alloc : 34068433,
Reliable-mail send success receive duplic
target ID 1 1 0 0
target MAC 15230 15230 0 0
unrel target ID 7615 0
There is 1 current jumbo IPC session
Possible errors:
*** recv from non-exist unit 2 times: unit 5
```

History

Release version	Command history
08.0.00a	This command was introduced.

clear statistics

Clears all counters and statistics.

Syntax

clear statistics [**dos-attack** | **traffic-policy** *traffic-policy-name*]

clear statistics [**rate-counters**] [**ethernet** *unit/slot/port* | **lag** *lag-id* | **management** *number* | **tunnel** [*number*] | **unit** *number*]

Parameters

dos-attack
Clears statistics about ICMP and TCP SYN packets dropped because burst thresholds were exceeded.

traffic-policy *traffic-policy-name*
Clears traffic policy counters (access list and rate limit counters).

rate-counters
Clears the rate counters.

ethernet *unit/slot/port*
Clears egress queue statistics (resets the statistics to zero) for all unit/slot/port.

lag *lag-id*
Specifies the LAG virtual interface.

management *number*
Clears all statistics on a management port.

tunnel
Clears all GRE tunnel statistics.

number
Clears GRE tunnel statistics for the specified tunnel.

unit *number*
Clears a stack unit statistics.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example clears the statistics for a specific Ethernet interface.

```
device(config)# clear statistics ethernet 1/1/1
```

The following example clears the rate counters for a tunnel interface.

```
device(config)# clear statistics rate-counters tunnel 2
```

The following example clears the statistics about ICMP and TCP SYN packets dropped.

```
device(config)# clear statistics dos-attack
```

The following example clears access list and rate limit counters.

```
device(config)# clear statistics traffic-policy counttwo
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

clear statistics openflow

Clears OpenFlow statistics.

Syntax

clear statistics openflow { **group** | **meter** | **controller** }

Parameters

group

Clears statistics for all groups.

meter

Clears statistics for all meters.

controller

Clears statistics for all controllers.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

This command can be entered in three configuration modes: User EXEC mode, Privileged EXEC mode, or global configuration mode.

Examples

The following example, entered in User EXEC mode, clears statistics for all groups in User EXEC mode.

```
device> clear statistics openflow group
```

The following example, entered in Privileged EXEC mode, clears statistics for all meters in Privileged EXEC mode.

```
device> enable
device# clear statistics openflow meter
```

The following examples, entered in global configuration mode, clears statistics for all controllers.

```
device# configure terminal
device(config) # clear statistics openflow controller
```

History

Release	Command History
08.0.20	This command was introduced.

clear stp-protect-statistics

Clears the BPDU drop counters for all ports on the device that have STP Protection enabled.

Syntax

clear stp-protect-statistics [**ethernet** *unit/slot/port* | **lag** *lag-id*]

Parameters

ethernet *unit/slot/port*

Specifies the Ethernet interface on which to clear the BPDU drop counters.

lag *lag-id*

Specifies the LAG virtual interface.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

For each port that has STP Protection enabled, the ICX device counts and records the number of dropped BPDUs. You can use this command to clear the BPDU drop counters for all ports on the device, or for a specific port on the device.

Examples

The following example shows how to clear the BPDU drop counters on all ports.

```
device(config)# clear stp-protect-statistics
```

The following example shows how to clear the BPDU drop counter on a specific port.

```
device(config)# clear stp-protect-statistics ethernet 1/1/1
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

clear webauth vlan

Clears the authenticated hosts or the blocked hosts.

Syntax

clear webauth vlan *vlan-id*{ **authenticated-mac** | **block-mac** } [*mac-address*]

Parameters

vlan-id

Specifies the VLAN ID.

authenticated-mac

Clears authenticated hosts in a Web Authentication VLAN. If a MAC address is specified, then only that host is cleared. If a MAC address is not specified, then all the authenticated hosts are cleared.

block-mac

Clears the configured time duration users must wait before the next cycle of Web Authentication attempts is allowed. If a MAC address is specified, then only that host is unblocked. If no MAC address is specified, then all the hosts are unblocked.

mac-address

Specifies the MAC address of the host. When used with **authenticated-mac** keyword, this is the dynamically authenticated host MAC address and when used with the **block-mac** keyword, this is the blocked host MAC address.

Modes

Privileged EXEC mode

Global configuration mode

VLAN configuration mode

Web Authentication configuration mode

Examples

The following example clears all the authenticated hosts.

```
device# clear webauth vlan 10 authenticated-mac
```

The following example clears the host with MAC address 1111.2222.3333.

```
device# clear webauth vlan 10 authenticated-mac 1111.2222.3333
```

The following example unblocks an authenticated host.

```
device# clear webauth vlan 20 block-mac 1111.2222.3333
```

cli timeout

Sets timeout for CLI session inactivity

Syntax

cli timeout { *time* }

no cli timeout { *time* }

Command Default

The default timeout is 2 minutes.

Parameters

time

The time in minutes a serial session can remain idle, after which the CLI session is terminated for inactivity. Available range is 0 through 240. The default is 2 minutes.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the timeout to the default value.

If the timeout is set to "0" the CLI session never times out.

The CLI session timeout also controls rconsole (remote console), Telnet, and SSH sessions.

You can display the configuration for the current session using the **show cli config** command.

Examples

The following example sets the CLI session to time out after three minutes of inactivity.

```
device# configure terminal
device(config)# cli timeout 3
```

The following example sets CLI and remote console sessions to never time out.

```
device(config)# cli timeout 0
device(config)# exit

device# show cli config

CLI Session Configuration
session timeout          : 0 min
skip-page mode           : disabled
skip-page config         : disabled
alias                    :
There are no entries in the alias list.
```

History

Release version	Command history
09.0.00	This command was introduced and replaces the **console timeout**, **ip ssh idle-time**, and **telnet timeout** commands.

client

Configures cluster clients manually.

Syntax

client *client-name*

no client *client-name*

Command Default

Cluster clients are not configured.

Parameters

client-name

Specifies the name of the client. The client name is an ASCII string and can be up to 64 characters in length.

Modes

Cluster configuration mode

Usage Guidelines

Client configuration requires client-name, RBridge ID, and Cluster Client Edge Port (CCEP). The client name can be different on the different cluster devices.

The **no** form of the command removes the manually configured cluster client.

Examples

The following example shows how to configure the client manually.

```
device(config)# cluster SX 10
device(config-cluster-SX)# client client-2
device(config-cluster-SX-client-2)# rbridge-id 200
device(config-cluster-SX-client-2)# client-interface ethernet 1/2
device(config-cluster-SX-client-2)# deploy
```

client-auto-detect config

Configures the automatically detected cluster clients into the running configuration and deploys all of the automatically detected clients.

Syntax

client-auto-detect config [**deploy-all**]

no client-auto-detect config [**deploy-all**]

Command Default

The cluster clients are not automatically detected and deployed.

Parameters

deploy-all

Deploys all automatically detected cluster clients.

Modes

Cluster configuration mode

Usage Guidelines

The **no** form of the command removes the configured and deployed automatically detected cluster clients.

Examples

The following example shows how to configure the automatically detected clients into the running configuration.

```
device(config)# cluster SX 400
device(config-cluster-SX)# client-auto-detect config
```

client-auto-detect ethernet

Enables cluster client automatic configuration on a specific port or range of ports.

Syntax

client-auto-detect ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

no client-auto-detect ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

Command Default

Cluster client automatic configuration is not enabled on the ports.

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet port on which you want to enable the cluster client automatic configuration.

to *stackid/slot/port*

Specifies the range of ports on which you want to enable the cluster client automatic configuration.

Modes

Cluster configuration mode

Usage Guidelines

The **no** form of the command disables the cluster client automatic configuration on the ports.

Examples

The following example shows how to enable cluster client automatic configuration on an Ethernet port.

```
device(config)# cluster SX 400
device(config-cluster-SX)# client-auto-detect ethernet 1/1/15
```

The following example shows how to enable cluster client automatic configuration on a range of ports.

```
device(config)# cluster SX 400
device(config-cluster-SX)# client-auto-detect ethernet 1/1/15 to 1/1/18
```

client-auto-detect start

Starts the cluster client automatic configuration.

Syntax

client-auto-detect start [**config-deploy-all**]

Command Default

The client automatic detection process is not enabled.

Parameters

config-deploy-all

Configures and deploys all automatically detected clients.

Modes

Cluster configuration mode

Usage Guidelines

Make sure that the network connection and configuration are in place before using this command. Within one minute of the time that each client is discovered, the client is automatically configured and deployed into the running configuration.

Within one minute of configuring this command, the system reports information and errors (if there are mismatches, such as an LACP configuration mismatch). You can fix a mismatch while the process is running.

Use the **config-deploy-all** option as an alternative to the **client-auto-detect config** command. The **client-auto-detect config** command also configures automatically detected clients into the running configuration and deploys all of the automatically detected clients.

Examples

The following example shows how to start the client automatic configuration process.

```
device(config)# cluster SX 400
device(config-cluster-SX)# client-auto-detect start
```

client-auto-detect stop

Stops the automatic configuration process of the running cluster client.

Syntax

client-auto-detect stop

Command Default

The automatic configuration process of the running cluster client is not stopped if the client automatic detection process is enabled using the **client-auto-detect ethernet** command.

Modes

Cluster configuration mode

Usage Guidelines

All auto-detected but unconfigured clients will be removed.

Examples

The following example shows how to stop the automatic configuration process of the running cluster client.

```
device(config)# cluster SX 400
device(config-cluster-SX)# client-auto-detect stop
```

client-interface

Configures the physical port or static LAG port as the Cluster Client Edge Port (CCEP).

Syntax

client-interface { **ethernet** *unit/slot/port* | **lag** *lag-id* }

no client-interface { **ethernet** *unit/slot/port* | **lag** *lag-id* }

Command Default

A port is not configured as the CCEP.

Parameters

ethernet *unit/slot/port*

Configures the specified Ethernet port as the client CCEP.

lag *lag-id*

Configures the specified LAG as the client CCEP.

Modes

Cluster configuration mode

Cluster client configuration mode

Usage Guidelines

The **no** form of the command removes the port as the CCEP.

Examples

The following example shows how to configure a port as the CCEP.

```
device(config)# cluster SX 400
device(config-cluster-SX)# client 1
device(config-cluster-SX-client-1)# client-interface ethernet 1/1/5
device(config-cluster-SX-client-1)# deploy
```

client-interfaces shutdown

Shuts down all the local client interfaces in the cluster.

Syntax

client-interfaces shutdown

no client-interfaces shutdown

Command Default

Client interfaces are active.

Modes

Cluster configuration mode

Usage Guidelines

Use the **client-interfaces shutdown** command when performing a hitless upgrade operation. This command can be used to shut down all the local client interfaces in the cluster, resulting in fail-over of traffic to the peer device.

The **no** form of the command removes the client interface shutdown.

Examples

The following example shows how to shut down all the client interfaces in the cluster.

```
device(config)# cluster SX 4000
device(config-cluster-SX)# client-interfaces shutdown
```

client-isolation

Isolates the client from the network when Cluster Communication Protocol (CCP) is not operational.

Syntax

client-isolation strict

no client-isolation strict

Command Default

Client isolation is in loose mode.

Parameters

strict

Specifies the strict isolation mode.

Modes

Cluster configuration mode

Usage Guidelines

In strict mode, when the CCP goes down, the interfaces on both the cluster devices are administratively shut down. In strict mode, the client is completely isolated from the network if the CCP is not operational.

In loose mode (default), when the CCP goes down, the peer device performs the master/slave negotiation. After negotiation, the slave shuts down its peer ports, whereas the master peer ports continue to forward the traffic (keep-alive VLAN configured).

MCT cluster devices can operate in two modes. Both peer devices must be configured in the same mode.

NOTE
The CLI allows modification of the client isolation mode on MCT cluster devices even when the cluster is deployed. You must create the same isolation mode on both cluster devices.

The **no** form of the command sets client isolation mode back to loose mode.

Examples

The following example shows how to configure the client isolation strict mode.

```
device(config)# cluster SX 4000
device(config-cluster-SX)# client-isolation strict
```

client-to-client-reflection

Enables routes from one client to be reflected to other clients by the host device on which it is configured.

Syntax

client-to-client-reflection

no client-to-client-reflection

Command Default

This feature is enabled.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family L2VPN EVPN configuration mode

Usage Guidelines

Use the **no** form of this command to restore the default.

The host device on which it is configured becomes the route-reflector server.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

This example configures client-to-client reflection on the BGP4 host device.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# client-to-client-reflection
```

This example disables client-to-client reflection on the BGP4+ host device.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# no client-to-client-reflection
```

clock set

Sets the local clock time and date.

Syntax

clock set *hh:mm:ss mm-dd-yy/yyyy*

Parameters

hh:mm:ss

Specifies the local clock time in hours, minutes, and seconds.

mm-dd-yy/yyyy

Specifies the local clock date in month, day, and year format. Year may be specified with two or four numbers.

Modes

Privileged EXEC mode

Usage Guidelines

Valid date and time settings range from January 1, 1970 to December 31, 2035.

An active NTP server, if configured, automatically updates and overrides the local clock time.

Examples

The following example sets the time and date to 31 minutes past 4pm in the afternoon on July 28, 2016, for the local device:

```
device# clock set 16:31:35 07-28-16
```

clock summer-time

Sets the device clock summer-time and time zone options.

Syntax

clock summer-time

clock summer-time [**zone** { **australia** *australia-time* | **europe** *europe-time* | **gmt** *gmt-time* | **us** *us-time* } **start** *mm-dd-yy hh:mm:ss* **end** *mm-dd-yy hh:mm:ss*] [**offset** *offset-value*]

no clock summer-time

no clock summer-time [**zone** { **australia** *australia-time* | **europe** *europe-time* | **gmt** *gmt-time* | **us** *us-time* } **start** *mm-dd-yy hh:mm:ss* **end** *mm-dd-yy hh:mm:ss*] [**offset** *offset-value*]

Command Default

The default start and end time of day light savings will depend on the longitude of the country. See the Usage Guidelines section for details.

Parameters

australia *australia-time*

Specifies the Australia time zone. The value can be one of the following: cst (UTC+9.5), est (UTC+10), wst (UTC+8).

europe *europe-time*

Specifies the Europe time zone. The value can be one of the following: gmt (UTC), bst (UTC+1), ist (UTC+8), wet (UTC), west (UTC +1), cet (UTC+!), cest (UTC+2), eet (UTC+2), eest (UTC+3), msk (UTC+3), msd (UTC+4).

gmt *gmt-time*

Specifies the GMT time zone. The value can be one of the following: gmt+00 (United Kingdom), gmt+01 (France, Germany), gmt +02 (Eastern Europe, South Africa), gmt+03, gmt+03:30, gmt+04, gmt+04:30, gmt+05, gmt+05:30 (India), gmt+06, gmt+06:30, gmt+07, gmt+08 (China, Hong Kong, Taiwan), gmt+09 (Japan, Korea), gmt+09:30, gmt+10 (Australia), gmt+10:30, gmt+11, gmt +11:30, gmt+12, gmt-01, gmt-02, gmt-03, gmt-03:30, gmt-04, gmt-05, gmt-06, gmt-07, gmt-08, gmt-08:30, gmt-09, gmt-09:30, gmt-10, gmt-11, gmt-12.

us *us-time*

Specifies the US time zone. The value can be one of the following: alaska, aleutian, arizona, central, east-indiana, eastern, hawaii, michigan, mountain, pacific, samoa.

start *mm-dd-yy hh:mm:ss*

Specifies the summer-time start date and time for the local clock time in month, day, and year and hours, minutes, and seconds.

end *mm-dd-yy hh:mm:ss*

Specifies the summer-time end date and time for the local clock time in month, day, and year and hours, minutes, and seconds.

offset *offset-value*

Specifies the summer-time offset, in minutes.

Modes

Global configuration mode

Usage Guidelines

The **clock summer-time** command without any parameters sets the default daylight savings time for the corresponding time zone. Use this command with specific parameters if you need to manually configure the local clock summer-time and time zones values. Use the **clock timezone** command to set the device clock time zone with a default daylight savings time.

By default, daylight savings are implemented according to time zone in three sets of dates and times:

- USA—Summer time starts at 2:00am on the second Sunday of March and ends at 2:00am on the first Sunday of November.
- Europe—Summer time starts at 2:00am on the last Sunday of March and ends at 2:00am on the last Sunday of October.
- Rest of the world—Summer time starts at 2:00am on the last Sunday of March and ends at 2:00am on the last Sunday of October, but some countries have different start and end dates depending on the longitude.

When the configured time zone is different from the existing time zone due to a configuration of the time zone using the **clock summer-time** command, a y/n option appears.

The **no** form of this command disables daylight savings.

Examples

The following example sets the local device clock that resides in the US Central time zone to the US Mountain standard time zone, and you are reminded of this change with a y/n prompt. The daylight savings times are also different than the default for any US time zone.

```
device# configure terminal
Router(config)# clock summer-time zone us mountain start 10-30-16 02:00:00 end 02-27-17 02:00:00 offset
30
You are about to change the timezone config do you want to continue yes or no
(enter 'y' or 'n'): y
```

The following example removes the daylight savings set for the local device clock.

```
device# configure terminal
device(config)# no clock summer-time
```

History

Release version	Command history
08.0.50	This command was modified to add subsets of time zones specific to Australia and Europe.

clock timezone

Sets the device system clock time zone options using either Greenwich Mean time (GMT) or a specified global region with a subzone that uses Universal Time Coordinated (UTC) plus or minus a number of hours.

Syntax

clock timezone { **australia** *australia-time* | **europe** *europe-time* | **gmt** *gmt-time* | **us** *us-time* }

no clock timezone { **australia** *australia-time* | **europe** *europe-time* |**gmt** *gmt-time* | **us** *us-time* }

Parameters

australia *australia-time*

Specifies the Australia time zone. The value can be one of the following: cst (UTC+9.5), est (UTC+10), wst (UTC+8).

europe *europe-time*

Specifies the Europe time zone. The value can be one of the following: gmt (UTC), bst (UTC+1), ist (UTC+8), wet (UTC), west (UTC +1), cet (UTC+!), cest (UTC+2), eet (UTC+2), eest (UTC+3), msk (UTC+3), msd (UTC+4).

gmt *gmt-time*

Specifies the GMT time zone. The value can be one of the following: gmt+00 (United Kingdom), gmt+01 (France, Germany), gmt +02 (Eastern Europe, South Africa), gmt+03, gmt+03:30, gmt+04, gmt+04:30, gmt+05, gmt+05:30 (India), gmt+06, gmt+06:30, gmt+07, gmt+08 (China, Hong Kong, Taiwan), gmt+09 (Japan, Korea), gmt+09:30, gmt+10 (Australia), gmt+10:30, gmt+11, gmt +11:30, gmt+12, gmt-01, gmt-02, gmt-03, gmt-03:30, gmt-04, gmt-05, gmt-06, gmt-07, gmt-08, gmt-08:30, gmt-09, gmt-09:30, gmt-10, gmt-11, gmt-12.

us *us-time*

Specifies the US time zone. The value can be one of the following: alaska, aleutian, arizona, central, east-indiana, eastern, hawaii, michigan, mountain, pacific, samoa.

Modes

Global configuration mode

Usage Guidelines

Use this command if you need to manually configure the local clock summer-time and time zones values. Use the **clock timezone** command to set only the clock time zone.

The **no** form of this command resets the default summer-time and zone values.

Examples

The following example sets the device clock to the Australia western standard time zone.

```
device# configure terminal
device(config)# clock timezone australia wst
```

The following example sets the device clock to the US Mountain time zone.

```
device# configure terminal
device(config)# clock timezone us mountain
```

History

Release version	Command history
08.0.50	This command was modified to add subsets of time zones specific to Australia and Europe.

cluster

Configures a Multi-Chassis Trunking (MCT) cluster.

Syntax

cluster [*cluster-name*] *cluster-id*

no cluster [*cluster-name*] *cluster-id*

Command Default

An MCT cluster is not configured.

Parameters

cluster-name

Specifies the cluster name as an ASCII string. The cluster name can be up to 64 characters in length.

cluster-id

Specifies the cluster ID. The ID value range can be from 1 through 4095.

Modes

Global configuration mode

Usage Guidelines

The *cluster-name* variable is optional; the device auto-generates *cluster-name* as CLUSTER-X when only the cluster ID is specified.

NOTE

The *cluster-id* variable must be the same on both cluster devices.

The **no** form of the command removes the MCT cluster configuration.

Examples

The following example configures an MCT cluster.

```
device(config)# cluster SX 4000
device(config-cluster-SX)# rbridge-id 3
```

cluster-id

Configures a cluster ID for the route reflector.

Syntax

cluster-id{*num*|*ip-addr*}

no cluster-id{*num*|*ip-addr*}

Command Default

The default cluster ID is the device ID.

Parameters

num

Integer value for cluster ID. Range is from 1 through 65535.

ip-addr

IPv4 address in dotted-decimal notation.

Modes

BGP configuration mode

Usage Guidelines

When configuring multiple route reflectors in a cluster, use the same cluster ID to avoid loops within the cluster.

NOTE
The cluster ID is shared for all VRF instances.

The **no** form of the command restores the default.

Examples

The following example configures a cluster ID for the route reflector.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# cluster-id 1234
```

compare-routerid

Enables comparison of device IDs, so that the path-comparison algorithm compares the device IDs of neighbors that sent otherwise equal-length paths.

Syntax

compare-routerid

no compare-routerid

Modes

BGP configuration mode

Examples

The following example configures the device always to compare device IDs.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# compare-routerid
```

confederation identifier

Configures a BGP confederation identifier.

Syntax

confederation identifier *autonomous-system number*

no confederation identifier

Command Default

No BGP confederation identifier is identified.

Parameters

autonomous-system number

Specifies an autonomous system number (ASN). The configurable range of values is from 1 through 4294967295.

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command removes a BGP confederation identifier.

Examples

The following example specifies that confederation 65220 belongs to autonomous system 100.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 65220
device(config-bgp-router)# confederation identifier 100
```

confederation peers

Configures subautonomous systems to belong to a single confederation.

Syntax

confederation peers *autonomous-system number* [...*autonomous-system number*]

no confederation peers

Command Default

No BGP peers are configured to be members of a BGP confederation.

Parameters

autonomous-system number

Autonomous system (AS) numbers for BGP peers that will belong to the confederation. The configurable range of values is from 1 through 4294967295.

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command removes an autonomous system from the confederation.

Examples

The following example configures autonomous systems 65520, 65521, and 65522 to belong to a single confederation under the identifier 100.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 65020
device(config-bgp-router)# confederation identifier 100
device(config-bgp-router)# confederation peers 65520 65521 65522
```

copy disk0 (config)

Copies the running configuration or startup configuration from disk0 to flash.

Syntax

copy disk0 { **running-config** [**overwrite**] | **startup-config** } { *filename* }

Parameters

running-config [**overwrite**]

Copies the running configuration from disk0 to flash. When overwrite is specified, overwrites the current running-configuration.

startup-config

Copies the startup-configuration from disk0 to flash.

filename

Specifies the destination filename on flash.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **show files** command to verify if the running configuration and startup configuration are copied to flash correctly.

Examples

The following example copies the running configuration from USB (disk0) to ICX flash memory.

```
device# copy disk0 running-config running-config.txt
Parameter Validation Successful
Running Config Download started
Running Config Download Done
Running Config Download Complete
```

The following example copies the startup configuration from USB (Disk 0) to ICX flash memory.

```
device# copy disk0 startup-config startup.txt
Parameter Validation Successful
Startup Config Download started
Startup Config Download Done
Startup Config Write Done
Startup Config Download Complete
```

History

Release version	Command history
08.0.30	This command was introduced.
09.0.00	This command was modified to remove the **license** option.

copy disk0 flash

Copies configuration data from an external USB disk to flash.

Syntax

copy disk0 flash *file-name* { **certificate-data-file** | **client-certificate** | **client-private-key** | **file** | **fips-primary-sig** | **fips-secondary-sig** | **fips-ufi-primary-sig** | **fips-ufi-secondary-sig** | **local-pri** | **local-sec** |**primary** | **secondary** | **ssh-pub-key-file** | **ssl-private-key-file** | **trust-certificate** }

Parameters

certificate-data-file
Imports the SSL client certificate file.

client-certificate
Specifies a client RSA certificate.

client-private-key
Specifies a client RSA private key.

file-name
Specifies a file.

fips-primary-sig
Specifies the primary signature file.

fips-secondary-sig
Specifies the secondary signature file.

fips-ufi-primary-sig
Specifies the primary UFI signature file.

fips-ufi-secondary-sig
Specifies the secondary UFI signature file.

local-pri
Specifies a primary code image on the local unit.

local-sec
Specifies a ssecondary code image on the local unit.

primary
Specifies a primary code image.

secondary
Specifies a secondary code image.

ssh-pub-key-file
Imports the client public keys.

ssl-private-key-file
Imports the SSL client private key.

trust-certificate
Specifies a trust certificate.

Modes

Privileged EXEC mode

Examples

The following example copies a file to the secondary flash memory from an external USB disk.

```
device# copy disk0 flash ufip.bin secondary
Parameter Validation Successful
Image Download started
Image Download Done
Image Validation Started
Image Write Done
Image Download Complete
```

History

Release version	Command history
08.0.90	The command was modified. The following parameters were deprecated: bootrom, fips-bootrom-sig, fips-primary-sig, fips-secondary-sig.
09.0.00	The **certificate-data-file**, **ssh-pub-key-file**, and **ssl-private-key-file** keywords were added.

copy disk0 system-manifest

Copies the system upgrade file from an external USB disk.

Syntax

copy disk0 system-manifest *filename* { **primary** | **secondary** } [**router-image**]

Parameters

filename
: Specifies the manifest file.

primary
: Upgrade using the primary application and boot image.

secondary
: Upgrade using the secondary application and boot image.

router-image
: Specifies that the file being copied is a router image.

Modes

Privileged EXEC mode

Usage Guidelines

The primary and secondary options upgrade the boot and application images.

When upgrading to 08.0.80 or a later release, the system upgrades the images using the UFI bundle in the manifest folder of the USB drive. A UFI bundle has application or boot image and signature images.

Examples

The following example copies the system manifest package from USB (Disk 0) to the ICX device as a secondary image.

```
device# copy disk0 system-manifest FI09000_Manifest.txt secondary
Parameter Validation Successful
Manifest file Download Done
Signature Download Done
Signature Write Done
Image Download Done
Image Validated
Image Write Done
Manifest Download Complete
```

History

Release version	Command history
08.0.90	This command was introduced.

Release version	Command history
10.0.00	The **switch** keyword was deprecated.

copy flash disk0

Copies the image binary or a specified file stored in flash to the external USB flash drive.

Syntax

copy flash disk0 { **system-manifest** | **ufi-primary** *image-file* | **ufi-secondary** *image-file* | **file** *source-file destination-file* | **primary** *image-file* | **secondary** *image-file* }

Parameters

system-manifest
To copy the manifest package from flash to USB.

ufi-primary *image-file*
Specifies the primary partition of the UFI.

ufi-secondary *image-file*
Specifies the secondary partition of the UFI.

file *source-file destination-file*
Specifies the file to be copied.

primary *image-file*
Specifies the primary partition of the flash where the source file is located.

secondary *image-file*
Specifies the secondary partition of the flash where the source file is located.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **show files disk0** command to verify the files copied.

Examples

The following example shows copying the primary partition's UFI to USB.

```
device# copy flash disk0 ufi-primary ufip.bin
Parameter Validation Successful
Image Upload to USB started
Image Upload to USB Done
Image Upload Complete
```

The following example copies the startup-config file from the flash and saves it as the file startup.txt on the USB.

```
device# copy flash disk0 file startup-config.txt startup.txt
Parameter Validation Successful
File Upload to USB started
File Upload to USB Done
File Upload Complete
```

The following example shows copying the image binary stored in the primary partition of the flash to the external USB.

```
device# copy flash disk0 primary p.bin
Parameter Validation Successful
Image Upload to USB started
Image Upload to USB Done
Image Upload Complete
```

The following example shows copying the manifest package from flash to USB.

```
device# copy flash disk0 system-manifest
Parameter Validation Successful
USB Manifest Upload in progress...
Manifest file Upload to USB Done
Signature Upload to USB started
Signature Upload to USB Done
Image Upload to USB started
Image Upload to USB Done
Config Upload to USB started
Config Upload to USB Done
Manifest Upload Complete
```

History

Release version	Command history
08.0.30	This command was introduced.
09.0.00	This command was modified to add the **system-manifest**, **ufi-primary**, and **ufi-secondary** options.

copy flash flash

Copies the flash image between primary and secondary flash memory or from active controller primary or secondary flash memory to a stack unit.

Syntax

copy flash flash [**primary**|**secondary**|**unit-id-pri***unit-num*|**unit-id-sec***unit-num*]

Parameters

primary
Copy secondary flash to primary flash

secondary
Copy primary flash to secondary flash

unit-id-pri*unit-num*
Copy active primary image to unit ID

unit-id-sec*unit-num*
Copy active secondary image to unit ID

unit-num
Stack unit ID

Modes

Privileged EXEC mode

Usage Guidelines

The command can be used to overcome stack unit image mismatches.

In place of a single unit ID (*unit-num*), the command can accept a list of stack unit IDs, a range of stack unit IDs, or a combination of the two. IDs in a list must be separated by commas. Ranges of IDs are identified by a hyphen. No spaces may be used in lists or ranges.

Examples

The following example copies primary flash to secondary flash.

```
device# copy flash flash secondary
Parameter Validation Successful
ImageCopy started
Image Download Done
Image Validation Started
Image Write Done
Image Download Complete
```

In the following example, the active controller primary flash image is copied to stack unit 2.

```
device# copy flash flash unit-id-pri 2
```

In the following example, the active controller secondary flash image is copied to a series of stack units (2, 3, and 4) and a range (5-8).

```
device# copy flash flash unit-id-sec 2,3,4,5-8
```

copy flash scp

Uploads a copy of an OS image file from a FastIron device's primary or secondary flash memory to an SCP server. The syntax for copying an image between two devices under test (DUTs) is different from the syntax for uploading from an ICX device to a Linux or a Windows server.

Syntax

Syntax for copying an image between two DUTs:

copy flash scp { *ipv4-address* | *ipv4-hostname* | **ipv6** { *ipv6-address-prefix/prefix-length* | *ipv6-hostname* } } { **flash:pri:***remote-filename* | **flash:sec:***remote-filename* { **primary** | **secondary** } }

Syntax for uploading from an ICX device to a Linux or a Windows server:

copy flash scp { *ipv4-address* | *ipv4-hostname* | **ipv6** { *ipv6-address-prefix/prefix-length* | *ipv6-hostname* } *remote-filename* { **primary** | **secondary** }

Parameters

ipv4-address
: Specifies the IPv4 address of the SCP server.

ipv4-hostname
: Specifies the IP hostname of the SCP server.

ipv6
: Specifies the IPV6 address method for SCP file transfer.

ipv6-address-prefix/prefix-length
: Specifies the IPV6 address of the SCP server. You must specify this address in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

ipv6-hostname
: Specifies the IPv6 hostname of the SCP server.

remote-filename
: Specifies the name of the file in the SCP server that is to be transferred, including the path to the remote image where applicable. Valid values range from 1 through 127 characters.

flash:pri:*filename*
: Specifies the binary image in primary flash memory and the target filename when transferring files between DUTs.

flash:sec:*filename*
: Specifies the binary image in secondary flash memory and the target filename when transferring files between DUTs.

flash:primary
: Specifies the binary image in primary flash memory. Configure the **flash:primary** keyword when transferring files between DUTs. See the usage note regarding using this keyword when transferring files between DUTs.

primary
: Specifies the binary image in primary flash memory.

secondary
: Specifies the binary image in secondary flash memory.

Modes

Privileged EXEC mode

Usage Guidelines

You are prompted for username and password when you configure this command.

NOTE
When transferring files between DUTs, you should configure the **flash:primary** keyword instead of the **primary** keyword because the SCP server does not support remote-filename aliases.

Examples

The following example uploads the binary image in primary flash from an ICX DUT to primary flash on the target DUT with the IP address 10.198.137.141. The user is prompted for username and password.

```
device# copy flash scp 10.198.137.141 flash:primary primary

 Login:tsmith

 Password:
Parameter Validation Successful
.....................................................File Upload Complete
```

The following example uploads a copy of an OS image file from the primary flash memory on an ICX device to the SCP server:

```
device# copy flash scp 10.20.1.1 SPS08040-scp.bin primary
device# copy flash scp 10.20.1.1 SPS08040-scp.bin secondary
```

The following example uploads a copy of an OS image file from the primary flash memory on an ICX device to an SCP server with the IP address of 172.26.51.180 :

```
device# copy flash scp 172.26.51.180 imagefile primary
```

The following example uploads a copy of an OS image file from the primary flash memory on an ICX device to the SCP server:

```
device# copy flash scp 10.20.1.1 /tftp/ primary
```

The following example uploads a copy of an OS image file from the primary flash memory on an ICX device to the SCP server: The SCP server with the destination filename is explicitly specified.

```
device# copy flash scp 10.20.1.1 /tftp/SPS08040-scp.bin primary
```

The following example uploads a copy of an OS image file from the primary flash memory on an ICX device to the SCP server and displays the resulting format of the copy operation.

```
device# copy flash scp 10.177.16.145 /dataserve/switchdumps/Sh_bkup/10/  primary

Result:

[fvt@dataserve01-ai 10]$ ls -ltr
rwxrwxrwt 1 fvt   200  94765343 Aug 25  2022 GZR10000_b375.bin
```

History

Release version	Command history
08.0.20	This command was introduced.
09.0.00	This command was modified. The **flash:pri:***filename* and the **flash:sec:***filename* options are added for DUTs. The **outgoing-interface**, **public-key** , and *remote-port* options are deprecated.

copy flash tftp

Copies contents from ICX device flash memory to a TFTP server.

Syntax

copy flash tftp { *ipv4-address* | *ipv6-address* } *filename* { **file** | **primary** | **secondary** }

Parameters

ipv4-address

Specifies the IPv4 address of the TFTP server.

ipv6-address

Specifies the IPv6 address of the TFTP server.

filename

Specifies the name of the file that must be copied from the flash memory to the TFTP server.

file

Copies a file from flash memory to the TFTP server.

primary

Copies the primary code image to the TFTP server.

secondary

Copies the secondary code image to the TFTP server.

Modes

Privileged EXEC mode

Examples

The following example copies the startup-configuration file from ICX flash memory to the TFTP server at the specified IPv4 address.

```
device# copy flash tftp 10.176.6.93 startup-config.txt  file
Parameter Validation Successful
....File Upload Complete
```

The following example copies the image in primary flash to the filename primary.bin on the TFTP server with the IP address 10.176.6.93.

```
device# copy flash tftp  10.176.6.93 primary.bin primary
Parameter Validation Successful
.........................File Upload Complete
```

copy https flash

Copies an image from the HTTPS server to the flash memory.

Syntax

copy https flash {*ip-address*|*ipv6-address*}*file-name*{**primary**|**secondary**}[**port***port-num*]

Parameters

ip-address
: Specifies an IPv4 address.

ipv6-address
: Specifies an IPv6 address.

file-name
: Specifies the file name.

primary
: Specifies the primary partition.

secondary
: Specifies the secondary partition.

port*port-num*
: Specifies the TCP server port number. Valid values range from 1 through 65535. If no port number is specified, the default is 443.

Modes

Privileged EXEC mode

Usage Guidelines

Be aware when using this command that the flash memory is locked for the entire image download and installation process.

If a unified file image (UFI) is specified, the UFI consists of the application image, the boot code image, and the FI signature in one unified file.

Examples

The following example copies an image from the HTTPS server with IP address 10.2.38.4 to primary flash and saves it under the filename webimage.

```
device# copy https flash 10.2.38.4  webimage primary
Parameter Validation Successful
Image Download Started
.............................Image Download Done
Image Validation Started
Image Validation Completed
Image Write Done
Image Download Complete
```

The following example copies the “SPR08070b1.bin” image from the HTTPS server to the flash primary partition. IP address 10.1.1.1 is specified and port 876 is specified.

```
device# copy https flash 10.1.1.1 SPR08070b1.bin primary port 876
```

The following example copies the “SPR08070b1.bin” image from the HTTPS server to the flash secondary partition. IP address 10.2.1.1 is specified. Because no port is specified, the default port 443 is used.

```
device# copy https flash 10.2.1.1 SPR08070b1.bin secondary
```

The following example copies a primary UFI image file from the HTTPS server to the flash primary partition. IP address 10.2.1.1 is specified and port 700 is specified. The UFI consists of the application image, the boot code image, and the FI signature in one unified file.

```
device# copy https flash 10.2.1.1 SPR08080b1ufi.bin primary port 700
```

History

Release version	Command history
08.0.80	This command was introduced.
09.0.00	This command was modified. The FQDN option was deprecated. The IPv6 address option as added.

copy https startup-config

Copies a configuration file from the HTTPS server to the startup configuration file.

Syntax

copy https startup-config {*ip-address*|*ipv6-address*}*filename*[**port***port-num*]

Parameters

ip-address
: Specifies an IPv4 address for the HTTPS server.

ipv6-address
: Specifies an IPv6 address for the HTTPS server.

filename
: Specifies the filename.

port*port-num*
: Specifies the TCP server port number. Valid values range from 1 through 65535. If no port number is specified, the default is 443.

Modes

Privileged EXEC mode

Usage Guidelines

A reboot is required for the new configuration to take effect.

NOTE
Use caution when executing this command because the existing startup configuration is overwritten with the new configuration.

Examples

The following example copies the ICX startup configuration from the file cfg/backup.cfg on the HTTPS server at IP address 10.2.1.1 via port 876.

```
device# copy https startup-config 10.2.1.1 cfg/backup.cfg port 876
```

The following example copies the ICX startup configuration from the file cfg/backup.cfg on the HTTPS server with the IP address 10.1.1.1. Because no port is specified, the default port 443 is used.

```
device# copy https startup-config 10.1.1.1 cfg/backup.cfg
```

History

Release version	Command history
08.0.80	This command was introduced.
09.0.00	This command was modified. The FQDN option was deprecated.

copy running-config disk0

Copies the running configuration from internal flash to external USB flash drive.

Syntax

copy running-config disk0 { *filename* }

Parameters

filename

Specifies the target filename for the running configuration file.

Modes

Privileged EXEC.

Usage Guidelines

Use the **show files disk0** command to verify the running configuration is copied.

Examples

The following example copies the running configuration from the internal flash to the external USB flash drive.

```
device# copy running-config disk0 rconfig.txt
Parameter Validation Successful
Running Config Upload to USB started
Running Config Upload to USB Done
Running Config Upload Complete
```

History

Release version	Command history
08.0.30	This command was introduced.

copy running-config https

Uploads a copy of the running configuration file from an ICX device to an HTTPS server.

Syntax

copy running-config https{*fqdn-name*|*ip-address*}*filename*[**port***port-num*]

Parameters

fqdn-name

Specifies the fully qualified domain name (FQDN) of the server.

ip-address

Specifies the HTTPS server address as an IPv4 address in the form A.B.C.D or an IPv6 address in the form X:X::X:X.

filename

Specifies the destination filename.

port*port-num*

Specifies the HTTPS server port. Valid values range from 1 through 65535. If no port number is specified, the default is 443.

Modes

Privileged EXEC mode

Examples

The following example uploads a copy of the running configuration file from a device to the HTTPS server, and specifies port 200.

```
device# copy running-config https 10.1.1.1 upload/backup.cfg port 200
```

History

Release version	Command history
08.0.80	This command was introduced.

copy running-config scp

Uploads a copy of the running configuration file from a FastIron device to an SCP server.

Syntax

copy running-config scp{*ipv4-address*|*ipv4-hostname*|**ipv6**{*ipv6-address*|*ipv6-hostname*}*remote-filename*}

Parameters

ipv4-address
: Specifies the IPV4 address of the SCP server.

ipv4-hostname
: Specifies the IP hostname of the SCP server.

ipv6
: Specifies the IPV6 address method for SCP file transfer.

ipv6-address
: Specifies the IPV6 address of the SCP server. You must specify this address in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

ipv6-hostname
: Specifies the IPv6 hostname of the SCP server.

remote-filename
: Specifies the name of the file in the SCP server that is going to be uploaded. You can specify up to 127 characters for the filename.

Modes

Privileged EXEC mode

Usage Guidelines

You are prompted for username and password when you configure this command.

Examples

The following example uploads a copy of the running configuration file from an ICX device to an SCP server with the IP address 172.26.51.180.

```
device# copy running-config scp 172.26.51.180 runconfig
```

History

Release version	Command history
08.0.20	This command was introduced.

Release version	Command history
09.0.00	This command was modified. The **outgoing-interface**, **public-key** , and *remote-port* options were deprecated.

copy running-config tftp

Uploads a copy of the running configuration file from a Layer 2 or Layer 3 ICX switch to a Trivial File Transfer Protocol (TFTP) server.

Syntax

copy running-config tftp *tftp-ip-addr filename*

Parameters

tftp-ip-addr

The IPv4 or IPv6 address of the TFTP server.

filename

Specifies the destination filename.

Modes

Privileged EXEC mode

Examples

The following example uploads a copy of the running configuration file to a TFTP server.

```
device# copy running-config tftp 10.176.6.93 rc.txt
Parameter Validation Successful
....File Upload Complete
```

copy scp certificate-data-file

Downloads a copy of the SSL client certificate from an SCP server to the ICX device

Syntax

copy scp certificate-data-file { *scp-hostname* | *ip-address* [*remote-port*] | **ipv6** { *ipv6-hostname* | *ipv6-address* } } { *source-filename* }

Parameters

scp-hostname
: Specifies the hostname of the SCP host.

ip-address
: Specifies the IPv4 address of the SCP host (in the form A.B.C.D).

ipv6 { *ipv6-hostname* | *ipv6-address* }
: Specifies the IPv6 hostname or IPv6 address of the SCP host.

remote-port
: Specifies the remote port number. Valid decimal value is 1 through 65535.

source-filename
: Specifies the filename to be copied from the SCP host.

Modes

Privileged Exec Mode

Usage Guidelines

Examples

The following example downloads a copy of the certificate file named certfile from the SCP server with the IPv4 address 10.2.22.11 via remote port 123.

```
device# copy scp certificate-data-file 10.2.22.11 123 certfile
```

The following example downloads a copy of the certificate file named certificate2 from the IPv6 host named vee6scp.

```
device# copy scp certificate-data-file ipv6 vee6scp certificate2
```

History

Release version	Command history
09.0.00	This command was introduced.

copy scp client-certificate

Downloads a copy of the client RSA certificate from an SCP server to the ICX device.

Syntax

copy scp client-certificate { *scp-hostname* | *ip-address* [*remote-port*] | **ipv6** { *ipv6-hostname* | *ipv6-address* } } { *source-filename* }

Parameters

scp-hostname
: Specifies the hostname of the SCP host.

ip-address
: Specifies the IPv4 address of the SCP host (in the form A.B.C.D).

ipv6 { *ipv6-hostname* | *ipv6-address* }
: Specifies the IPv6 hostname or IPv6 address of the SCP host.

remote-port
: Specifies the remote port number. Valid decimal value is 1 through 65535.

source-filename
: Specifies the filename to be copied from the SCP host.

Modes

Privileged Exec Mode

Usage Guidelines

Examples

The following example downloads a copy of the client certificate named clientcert from the server scphost1.

```
device# copy scp client-cerificate scphost1 clientcert
```

The following example downloads a copy of the client certificate clientcert from the SCP host server with the IPv6 address shown.

```
device# copy scp client-certificate ipv6 2001:DB8::300 clientcert
```

History

Release version	Command history
09.0.00	This command was introduced.

copy scp client-private-key

Downloads a copy of the client private RSA key from an SCP server to the ICX device

Syntax

copy scp client-private-key { *scp-hostname* | *ip-address* [*remote-port*] | **ipv6** { *ipv6-hostname* | *ipv6-address* } } { *source-filename* }

Parameters

scp-hostname
: Specifies the hostname of the SCP host.

ip-address
: Specifies the IPv4 address of the SCP host (in the form A.B.C.D).

ipv6 { *ipv6-hostname* | *ipv6-address* }
: Specifies the IPv6 hostname or IPv6 address of the SCP host.

remote-port
: Specifies the remote port number. Valid decimal value is 1 through 65535.

source-filename
: Specifies the filename to be copied from the SCP host.

Modes

Privileged Exec Mode

Usage Guidelines

Examples

The following example downloads a copy of the RSA key file rsakey from the server scphost1.

```
device# copy scp client-private-key scphost1 rsakey
```

The following example downloads a copy of the client private RSA key file clientrsa from the SCP host server with the IPv6 address shown.

```
device# copy scp client-private-key ipv6 2001:DB8::300 clientrsa
```

History

Release version	Command history
09.0.00	This command was introduced.

copy scp flash

Downloads a copy of the OS image file from an SCP server to primary or secondary flash memory, or downloads a copy of the boot file or signature file to the device.

Syntax

Syntax for copying an image between two DUTs:

copy scp flash { *ipv4-address* | *ipv4-hostname* | **ipv6** { *ipv6-address* | *ipv6-hostname* } *remote-filename* { { **flash:primary** | **flash:secondary** } }

Syntax for downloading to a DUT from a Linux or a Windows server:

copy scp flash { *ipv4-address* | *ipv4-hostname* | **ipv6** { *ipv6-address* | *ipv6-hostname* } *remote-filename* { **primary** | **secondary** } }

Parameters

ipv4-address
: Specifies the IPV4 address of the SCP server.

ipv4-hostname
: Specifies the IP host name of the SCP server.

ipv6
: Specifies the IPV6 address method for SCP file transfer.

ipv6-address
: Specifies the IPV6 address of the SCP server.

ipv6-hostname
: Specifies the IPv6 host name of the SCP server.

remote-filename
: Specifies the name of the file in the SCP server that is to be transferred. You can specify up to 127 characters for the file name.

flash:primary | **flash:secondary**
: Specifies the binary image in primary flash memory or secondary flash memory.

primary
: Specifies that the file being copied is a primary image file or a primary UFI image file.

secondary
: Specifies that the file being copied is a secondary image file or a secondary UFI image file.

Modes

Privileged EXEC mode

Usage Guidelines

When you configure this command, you are prompted for the username and password.

When transferring files between devices under test (DUTs), you should configure the **flash:primary** keyword instead of the **primary** keyword because the SCP server does not support *remote-filename* aliases.

The syntax for copying an image between two devices under test (DUTs) is different from the syntax for downloading from a DUT to a Linux or a Windows server.

The .sig file must be used when FIPS is enabled to validate the unified image with the corresponding signature file.

UFI image download is supported using TFTP, USB, and SCP only.

Examples

The following example copies the image from an SCP server to the secondary partition of the flash drive of an ICX device.

```
device# copy scp flash 10.198.137.141 /buildsjc/09000/fi/20210621_v09000/stage/Images/
TNR09000_b398ufi.bin secondary

 Login:tjones

 Password:
Parameter Validation Successful
Image Download started
................................................Image Download Done
Image Validation Started
............Image sync complete
Image Write Done
Image Download Complete
```

The following example copies a UFI file from the SCP server to the primary flash memory.

```
device# copy scp flash 10.2.3.4 SPR08080b1ufi.bin primary
```

The following example copies a UFI file from the SCP server to the secondary flash memory.

```
device# copy scp flash 10.2.3.4 SPR08080b1ufi.bin secondary
```

History

Release version	Command history
08.0.20	The command was introduced.
08.0.40	The **icx6450** and **icx6610** options were removed because they are supported only on ICX 6450 and ICX 6610 devices respectively.
08.0.80	The command was modified to add the **fips-ufi-primary-sig** and **fips-ufi-secondary-sig** keywords, and to download a UFI file to flash memory.
08.0.90	The command was modified. The following parameters were deprecated: **bootrom**, **fips-bootrom-sig**, **fips-primary-sig**, **fips-secondary-sig**.
09.0.00	The command was modified. The following parameters were deprecated: **outgoing-interface**, **public-key** , **fips-ufi-primary-sig**, **fips-ufi-secondary-sig**, and *remote-port*.

copy scp running-config

Downloads a copy of the running configuration file from an SCP server to an ICX device.

Syntax

copy scp running-config { *ipv4-address* | *ipv4-hostname* | **ipv6** { *ipv6-address* | *ipv6-hostname* } [*remote-port*] *remote-filename*

Parameters

ipv4-address
: Specifies the IPV4 address of the SCP server.

ipv4-hostname
: Specifies the IP hostname of the SCP server.

ipv6
: Specifies the IPV6 address method for SCP file transfer.

ipv6-address-prefix
: Specifies the IPV6 address of the SCP server. You must specify this address in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

ipv6-hostname
: Specifies the IPv6 hostname of the SCP server.

remote-port
: Specifies the remote port number for the TCP connection.

remote-filename
: Specifies the name of the file in the SCP server that is be transferred. You can specify up to 127 characters for the filename.

Modes

Privileged EXEC mode

Usage Guidelines

You are prompted for username and password when you configure this command.

Examples

The following example downloads a copy of the running configuration file from an SCP server to an ICX device:

```
device# copy scp running-config 172.26.51.180 abc.cfg
```

History

Release version	Command history
08.0.20	This command was introduced.

Release version	Command history
09.0.00	This command was modified. The following parameters were deprecated: **outgoing-interface**, **public-key**, and **overwrite**.

copy scp ssh-pub-key-file

Downloads a copy of a client public key (DSA/RSA) to the ICX device

Syntax

copy scp ssh-pub-key-file { *scp-hostname* | *ip-address* [*remote-port*] | **ipv6** { *ipv6-hostname* | *ipv6-address* } } { *source-filename* }

Parameters

scp-hostname
: Specifies the hostname of the SCP host.

ip-address
: Specifies the IPv4 address of the SCP host (in the form A.B.C.D).

ipv6 { *ipv6-hostname* | *ipv6-address* }
: Specifies the IPv6 hostname or IPv6 address of the SCP host.

remote-port
: Specifies the remote port number. Valid decimal value is 1 through 65535.

source-filename
: Specifies the filename to be copied from the SCP host.

Modes

Privileged Exec Mode

Usage Guidelines

Examples

The following example imports the file named publicrsafile from the SCP server with the IP address 10.2.34.26.

```
device# copy scp ssh-pub-key-file 10.2.34.26 publicrsafile
```

The following example imports the RSA public key file named rsapublic from the IPv6 SCP server named vee6host1.

```
device# copy scp ssh-pub-key-file ipv6 vee6host1 rsapublic
```

History

Release version	Command history
09.0.00	This command was introduced.

copy scp ssl-private-key-file

Downloads a copy of the SSL private key from an SCP host server to the ICX device

Syntax

copy scp ssl-private-key-file { *scp-hostname* | *ip-address* [*remote-port*] | **ipv6** { *ipv6-hostname* | *ipv6-address* } } { *source-filename* }

Parameters

scp-hostname
Specifies the hostname of the SCP host.

ip-address
Specifies the IPv4 address of the SCP host (in the form A.B.C.D).

ipv6 { *ipv6-hostname* | *ipv6-address* }
Specifies the IPv6 hostname or IPv6 address of the SCP host.

remote-port
Specifies the remote port number. Valid decimal value is 1 through 65535.

source-filename
Specifies the filename to be copied from the SCP host.

Modes

Privileged Exec Mode

Usage Guidelines

Examples

The following example imports the SSL private key file named sslkeyfile from the SCP server named scpserver1.

```
device# copy scp ssl-private-key-file scpserver1 sslkeyfile
```

The following example imports the SSL private key file named sslkeyfile from the server with the IPv6 address 1:2::3:4.

```
device# copy scp ssl-private-key-file 1:2::3:4 sslkeyfile
```

History

Release version	Command history
09.0.00	This command was introduced.

copy scp startup-config

Downloads a copy of the startup configuration file from an SCP server to an ICX device.

Syntax

copy scp startup-config { *ipv4-address* | *ipv4-hostname* | **ipv6** { *ipv6-address* | *ipv6-hostname* } [*remote-port*] *remote-filename*

Parameters

ipv4-address
: Specifies the IPV4 address of the SCP server, using 8-bit values in dotted decimal notation.

ipv4-hostname
: Specifies the IP hostname of the SCP server.

ipv6
: Specifies the IPV6 address method for SCP file transfer.

ipv6-address
: Specifies the IPV6 address of the SCP server. You must specify this address in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

ipv6-hostname
: Specifies the IPv6 hostname of the SCP server.

remote-port
: Specifies the remote port number for the TCP connection.

remote-filename
: Specifies the name of the file in the SCP server that is be transferred. You can specify up to 127 characters for the filename.

Modes

Privileged EXEC mode

Usage Guidelines

You are prompted for username and password when you configure this command.

Examples

The following example downloads a copy of the startup configuration file from an SCP server to an ICX device:

```
device# copy scp startup-config 10.198.137.141 startup.txt

 Login:tjones

 Password:
Parameter Validation Successful
Startup Config Download started
....Startup Config Download Done
Startup Config Write Done
Startup Config Download Complete
```

History

Release version	Command history
08.0.20	This command was introduced.
09.0.00	This command was modified. The following parameters were deprecated: **outgoing-interface** and **public-key**.

copy scp trust-certificate

Downloads a copy of the SSL trust certificate from an SCP server to the ICX device

Syntax

copy scp trust-certificate { *scp-hostname* | *ip-address* [*remote-port*] | **ipv6** { *ipv6-hostname* | *ipv6-address* } } { *source-filename* }

Parameters

scp-hostname
: Specifies the hostname of the SCP host.

ip-address
: Specifies the IPv4 address of the SCP host (in the form A.B.C.D).

ipv6 { *ipv6-hostname* | *ipv6-address* }
: Specifies the IPv6 hostname or IPv6 address of the SCP host.

remote-port
: Specifies the remote port number. Valid decimal value is 1 through 65535.

source-filename
: Specifies the filename to be copied from the SCP host.

Modes

Privileged Exec Mode

Usage Guidelines

Examples

The following example downloads a copy of the SSL trust certificate file named ssltrustcert from the SCP host server with the IP address 10.2.102.22.

```
device)# copy scp trust-certificate 10.2.102.22 ssltrustcert
```

The following example copies the SSL trust certificate trustfile from the IPv6 host named vee6scp host to the ICX device.

```
device# copy scp trust-certificate ipv6 vee6scphost trustfile
```

History

Release version	Command history
09.0.00	This command was introduced.

copy startup-config disk0

Copies the system startup-configuration file present in flash to the external USB drive.

Syntax

copy startup-config disk0{**filename**}

Parameters

filename

The system's startup configuration file.

Modes

Privileged EXEC.

Usage Guidelines

Use the **show files disk0** command to verify the startup configuration is copied.

Examples

The following example copies the startup-configuration from the ICX device flash to the external USB flash drive.

```
device# copy startup-config disk0 startup-config7650
Parameter Validation Successful
Startup Config Upload to USB started
Startup Config Upload to USB Done
Startup Config Upload Complete
```

History

Release version	Command history
08.0.30	This command was introduced.

copy startup-config https

Uploads a copy of the startup configuration file from a FastIron device to an HTTPS server.

Syntax

copy startup-config https { *fqdn-name* | *ip-address* } *file-name* [**port** *port-num*]

Parameters

fqdn-name
: Specifies the fully qualified domain name (FQDN) of the server.

ip-address
: Specifies an IP address.

file-name
: Specifies the file name.

port *port-num*
: Specifies the HTTPS server port. Valid values range from 1 through 65535. If no port number is specified, the default is 443.

Modes

Privileged EXEC mode

Usage Guidelines

If no startup configuration is present on the flash, an error message appears and HTTPS upload does not occur.

Examples

The following example uploads a copy of the startup configuration file from a device to the HTTPS server. Because no port is specified, the default of 443 is used.

```
device# copy startup-config https 10.1.1.1 backup/icx.cfg
```

History

Release version	Command history
08.0.80	This command was introduced.

copy startup-config scp

Uploads a copy of the startup configuration file from a FastIron device to an SCP server.

Syntax

copy startup-config scp{*ipv4-address*|*ipv4-hostname*|**ipv6**{*ipv6-address*|*ipv6-hostname*}*remote-filename*

Parameters

ipv4-address
: Specifies the IPV4 address of the SCP server, using 8-bit values in dotted decimal notation.

ipv4-hostname
: Specifies the IP hostname of the SCP server.

ipv6
: Specifies the IPV6 address method for SCP file transfer.

ipv6-address-prefix/prefix-length
: Specifies the IPV6 address of the SCP server. You must specify this address in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

ipv6-hostname
: Specifies the IPv6 hostname of the SCP server.

remote-filename
: Specifies the name of the file in the SCP server that is be transferred. You can specify up to 127 characters for the filename.

Modes

Privileged EXEC mode

Usage Guidelines

You are prompted for username and password when you configure this command.

Examples

The following example uploads a copy of the startup configuration file from an ICX device to the SCP server with the IP address 10.198.137.141.

```
device# copy startup-config scp 10.198.137.141 startup.txt

 Login:tjones

 Password:
Parameter Validation Successful
....File Upload Complete
```

History

Release version	Command history
08.0.20	This command was introduced.
09.0.00	This command was modified. The following parameters were deprecated: **outgoing-interface**, **public-key**, and *remote-port*.

copy startup-config tftp

Uploads a copy of the startup configuration file from a Layer 2 or Layer 3 switch to a TFTP server.

Syntax

copy startup-config tftp *tftp-ip-addr file-name*

Parameters

tftp-ip-addr

The IPv4 or IPv6 address of the TFTP server.

file-name

Specifies the file name.

Modes

Privileged EXEC mode

Examples

The following example uploads a copy of the startup configuration file to a TFTP server.

```
device# copy startup-config tftp 2001:db8::12:14 file4
```

copy tftp flash

Downloads files from a TFTP server to the flash memory of a device.

Syntax

copy tftp flash { *ipv4-address* | *ipv6-address* } *filename* { **certificate-data-file** | **client-certificate** | **client-private-key** | **fips-ufi-primary-sig** | **fips-ufi-secondary-sig** | **local-pri** | **local-sec** | **primary** | **secondary** | **ssh-pub-key-file** | **ssl-private-key-file** | **trust-certificate** }

Parameters

ipv4-address
Specifies the IPv4 address of the TFTP server from where the file must be copied to the device.

ipv6-address
Specifies the IPv6 address of the TFTP server from where the file must be copied to the device.

filename
Specifies the name of the file that must be copied from the TFTP server.

certificate-data-file
Specifies that the file being copied is a digital certificate issued by a third-party Certificate Authority (CA).

client-certificate
Specifies that the file being copied is an RSA client certificate file.

client-private-key
Specifies that the file being copied is a client RSA private key file.

fips-ufi-primary-sig
Specifies that the file being copied is a FIPS primary unified file image (UFI) signature file.

fips-ufi-secondary-sig
Specifies that the file being copied is a FIPS secondary UFI signature file.

local-pri
Specifies the primary code image on the local unit.

local-sec
Specifies the secondary code image on the local unit.

primary
Specifies that the file being copied is a primary image file or a primary UFI file.

secondary
Specifies that the file being copied is a secondary image file or a secondary UFI file.

ssh-pub-key-file
Specifies the authorized public keys file

ssl-private-key-file
Specifies that the file eing copied is an SSL client private key file

trust-certificate
Specifies that the file being copied is an SSL trust certificate.

Modes

Privileged EXEC mode

Usage Guidelines

If the device has 8 MB of flash memory, you must delete the primary and secondary images.

RUCKUS recommends that you use the **copy tftp flash** command to copy the boot code to the device during a maintenance window. Attempting to do so during normal networking operations may cause disruption to the network.

If you use the **fips-ufi-primary-sig** or **fips-ufi-secondary-sig** keyword, the filename must be in ASCII text and must contain the .sig extension.

The unified file image (UFI) consists of the application image, the boot code image, and the signature in one unified file.

The .sig file must be used when FIPS is enabled to validate the unified image with the corresponding signature file.

UFI image download is supported using TFTP, USB, and SCP only.

Examples

The following example copies a primary image from the specified TFTP server location to the flash memory of the ICX device and shows system output on download progress.

```
device# copy tftp flash 10.176.6.93 GZR09000_b398ufi.bin primary
Parameter Validation Successful
Image Download started
.........................Image Download Done
Image Validation Started
Image Write Done
Image Download Complete
```

The following example downloads a copy of a trusted certificate from the TFTP server to the ICX device flash.

```
device# copy tftp flash 10.198.137.230 SecureTrust_CA.pem trust-certificate
Parameter Validation Successful
....File Download Done
File Write Done
File Download Complete
```

The following example copies an image to the secondary flash memory.

```
device# copy tftp flash 10.2.3.4 SPR08080b1ufi.bin secondary
```

The following example copies a FIPS UFI signature file from the TFTP server to the primary flash memory.

```
device# copy tftp flash 10.37.2.40 signature_ufi.sig fips-ufi-primary-sig
```

The following example copies a FIPS UFI signature file from the TFTP server to the secondary flash memory.

```
device# copy tftp flash 10.37.2.40 signature_ufi.sig fips-ufi-secondary-sig
```

The following example copies a UFI image file from the TFTP server to the primary flash memory.

```
device# copy tftp flash 10.2.3.4 SPR08080b1ufi.bin primary
```

The following example imports a public key file from the TFTP server 192.168.10.1.

```
device# copy tftp flash 10.2.3.4 192.168.10.1 pkeys.txt ssh-pub-key-file
```

The following example imports a digital certificate issued by a third-party Certificate Authority (CA) and save it in the flash memory.

```
device# copy tftp flash 10.10.10.1 cacert.pem certificate-data-file
```

The following example shows how to import an SSL private key from a client.

```
device# copy tftp flash 192.168.9.210 keyfile ssl-private-key-file
```

History

Release version	Command history
08.0.80	The command was modified to add the **fips-ufi-primary-sig** and **fips-ufi-secondary-sig** keywords, and to download a UFI file to flash memory.
08.0.90	The command was modified. The **bootrom**, **fips-bootrom-sig**, **fips-primary-sig**, **fips-secondary-sig** keywords were removed.
09.0.00	The command was modified. The **ssh-pub-key-file**, **ssl-private-key-file**, and **certificate-data-file** keywords were added. The **private-key-file** option was deprecated.

copy tftp running-config

Downloads configuration information from a TFTP server into the ICX device's running configuration.

Syntax

copy tftp running-config { *ip-addr filename* } [**overwrite**]

Parameters

ip-addr

Specifies the IPv4 or IPv6 address of the TFTP server.

filename

Specifies the filename on the TFTP server.

overwrite

Overwrites the current running configuration.

Modes

Privileged EXEC mode

Examples

The following example downloads the running-configuration file from a TFTP server and saves it to the filename rc.txt on the ICX device.

```
device# copy tftp running-config 10.176.6.93 rc.txt
Parameter Validation Successful
Running Config Download started
....Running Config Download Done
Running Config Download Complete
```

copy tftp startup-config

Downloads a copy of the startup configuration file from a TFTP server to a Layer 2 or Layer 3 ICX switch.

Syntax

copy tftp startup-config { *tftp-ip-addr filename* }

Parameters

tftp-ip-addr

The IPv4 or IPv6 address of the TFTP server.

filename

Specifies the file name of the TFTP server.

Modes

Privileged EXEC mode

Examples

The following example downloads a copy of the startup configuration file from the specified TFTP server to the flash memory of the ICX device.

```
device# copy tftp startup-config 10.176.6.93 startup.txt
Parameter Validation Successful
Startup Config Download started
....Startup Config Download Done
Startup Config Write Done
Startup Config Download Complete
```

copy tftp system-manifest

Copies the system manifest package from a TFTP server to the ICX device. Simplifies the software upgrade process into a single command.

Syntax

copy tftp system-manifest { *ipv4-address* | *ipv6-address* } *filename* { **primary** | **secondary** } [**router-image**]

Parameters

ipv4-address
: Specifies the IPv4 address of the TFTP server from where the file must be copied to the device.

ipv6-address
: Specifies the IPv6 address of the TFTP server from where the file must be copied to the device.

filename
: Specifies the name of the file that must be copied from the TFTP server.

primary
: Specifies that the file being copied is a primary image file.

secondary
: Specifies that the file being copied is a secondary image file.

router-image
: Specifies that the file being copied is a router image.

Modes

Privileged EXEC mode

Usage Guidelines

This command only accepts manifest files with a .txt extension. Before starting any download, the file is checked for the correct keywords and extracts the image name and location.

Beginning with FastIron release 08.0.90, the options **all-images-primary** and **all-images-secondary** have been replaced by **primary** and **secondary**.

After the relevant images have been installed on the system, the user is notified that the upgrade is complete and is prompted to reload the system for the new images to take effect.

Examples

The following example downloads the system-manifest file secondary image from the specified TFTP server location.

```
ICX7650-48F Router# copy tftp system-manifest 10.176.6.93 stage/FI09000_b398_Manifest.txt secondary
Parameter Validation Successful
....Manifest file Download Done
....Signature Download Done
Signature Write Done
.......................Image Download Done
Image Validated
Image Write Done
Manifest Download Complete
```

History

Release version	Command history
08.0.00a	This command was introduced.
08.0.80	This command was modified. The **router-image** and **switch-image** keywords were added.
08.0.90	This command was modified. The options **all-images-primary** and **all-images-secondary** have been replaced by **primary** and **secondary**.
10.0.00	The **switch-image** keyword was deprecated.

cpu-limit

Configures a rate limit to control the number of CPU address messages.

Syntax

cpu-limit addr-msgs *number*

no cpu-limit addr-msgs *number*

Parameters

addr-msgs *number*

The number of address messages the CPU handles per second. The range for this rate limit is from 200 through 50,000 address messages per second.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

The address learning rate limit applies to each packet processor, which means that for a system with two packet processors, each processor can send address messages to the CPU at the established rate limit.

NOTE
Actual rates of address messages in hardware may have a variance of +200 or -100.

The **no** form of the command clears the rate limit for the address messages.

Examples

The following example sets the CPU address rate limit to 200.

```
device(config)# cpu-limit addr-msgs 200
```

critical-vlan

Specifies the VLAN into which the client should be placed when the RADIUS server times out while authenticating or re-authenticating users.

Syntax

critical-vlan *vlan-id*

no critical-vlan *vlan-id*

Command Default

The client is not part of the critical VLAN.

Parameters

vlan-id

Specifies the VLAN ID of the specific critical VLAN.

Modes

Authentication configuration mode

Usage Guidelines

When critical VLAN is configured and the authentication time out action is specified as critical VLAN under the port using the **authentication timeout-action critical-vlan** command at the interface level and if RADIUS timeout happens, the client is moved to the critical VLAN and any access policies applied to the critical VLAN is applied to the client.

The VLAN which is configured as a critical VLAN must be a valid VLAN configured on the device.

The **no** form of the command disables the critical VLAN by removing the client from the VLAN.

Examples

The following example configures VLAN 20 as critical VLAN.

```
device(config)# authentication
device(config-authen)# critical-vlan 20
```

History

Release version	Command history
08.0.20	This command was introduced.

crl-query (PKI)

Sets the Certificate Revocation List (CRL) query URL.

Syntax

crl-query { *url*}

no crl-query

Command Default

No CRL URL is specified by default.

Parameters

url

URL of the CRL Distribution Point.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the URL configuration.

The CRL Distribution Point (CDP) is used to retrieve a CA's latest CRL, usually an LDAP server or HTTP (web) server. The CDP is normally expressed as an ldap://host/dir or http://host/path URL.

Examples

The following example configures the HTTP address shown as the URL to be queried for the latest Certificate Revocation List.

```
device# configure terminal
device(config)# pki trustpoint trust1

device(config-pki-trustpoint-trust1)# revocation-check crl
device(config-pki-trustpoint-trust1)# crl-query http://FI-PKI02.englab.ruckus.com/CertEnroll/englab-FI-
PKI02-CA.crl
```

History

Release version	Command history
08.0.70	This command was introduced.

crl-update-time (PKI)

Sets the frequency of CRL updates.

Syntax

crl-update-time { *hours* }

no crl-update-time

Parameters

hours

Defines the number of hours between CRL updates. The valid range is 1 through 1000 hours.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the configuration.

A periodic CRL timer runs and after every expiry, it dumps the entire list of revocation information. The revocation check is done when the CRL information is downloaded for the first time. When the subsequent timer expires, the revocation check is not done unless the tunnels are forced to re-negotiated.

Examples

The following example sets the CRL update frequency to one hour.

```
device(config)#pki trustpoint trust1
device(config-pki-trustpoint-trust1)# revocation-check crl
device(config-pki-trustpoint-trust1)# crl-query http://FI-PKI02.englab.ruckus.com/CertEnroll/englab-FI-PKI02-CA.crl
device(config-pki-trustpoint-trust1)# crl-update-time 1
```

History

Release version	Command history
08.0.70	This command was introduced.

crypto generate

Regenerates the device key pair.

Syntax

crypto generate

Modes

Privileged EXEC mode

Examples

The following example regenerates the cryptographic key pair.

```
device# configure terminal
device(config)# crypto generate
```

History

Release version	Command history
08.0.92	This command was introduced.

crypto key client generate

Generates the crypto client key to enable SSH2.

Syntax

crypto key client generate rsa modulus *key-size*

Command Default

The crypto client key is not generated and SSH2 is not enabled.

Parameters

rsa

Generates an RSA client key pair.

modulus *key-size*

Specifies the modulus size of the RSA key pair, in bits. The default value for the modulus size is 2048.

Modes

Global configuration mode

Usage Guidelines

To use the SSH client for public key authentication, you must generate SSH client authentication keys and export the public key to the SSH servers to which you want to connect.

To disable SSH, you delete all of the client keys from the device. When a client key is deleted, it is deleted from the flash memory of all management modules.

An RSA key with modulus 2048 must be used in FIPS or Common Criteria mode.

Examples

The following example shows how to generate the RSA key pair.

```
device# conifgure terminal
device(config)# crypto key client generate rsa modulus 2048
```

History

Release version	Command history
09.0.00	This command was modified to remove the **modulus 1024** option and make **modulus 2048** the default. The **dsa** keyword was removed.

crypto key client zeroize

Deletes the crypto client key pair from the flash memory.

Syntax

crypto key client zeroize rsa label *string*

Parameters

rsa

Deletes an RSA client key pair.

label *string*

Specifies a RSA key pair label.

Modes

Global configuration mode

Usage Guidelines

To disable SSH, you delete all of the client keys from the device. When a client key is deleted, it is deleted from the flash memory of all management modules.

Examples

The following example shows how to delete the RSA client key pair.

```
device# configure terminal
device(config)# crypto key client zeroize rsa label testkey
```

History

Release version	Command history
09.0.00	This command was modified so that the **dsa** keyword was removed.

crypto key generate

Generates the crypto key to enable SSH.

Syntax

crypto key generate [**rsa** [**label** *label_name* **modulus** *key-size* | **modulus** *key-size*]]

crypto key generate [**ec** { **label** *label_name* [**size** [**256** | **384**]] | **size** [**256** | **384**] }]

Command Default

A crypto key is not generated and SSH is not enabled.

Parameters

rsa

Generates the RSA host key pair.

label *label_name*

Specifies a RSA key pair label.

modulus *key-size*

Specifies the modulus size of the RSA key pair, in bits. The valid value for the modulus size is 2048, which is also the default.

ec label *label_name*

Generates and names an elliptical key pair.

size

Specifies the size of the elliptical key pair in bits. The supported values are 256 and 384. The default is 384 bits.

Modes

Global configuration mode

Usage Guidelines

To enable SSH, you generate a RSA or ECDSA host key on the device. The SSH server on the ICX device uses this host RSA or ECDSA key, along with a dynamically generated server RSA or ECDSA key pair, to negotiate a session key and encryption method with the client trying to connect to it. While the SSH listener exists at all times, sessions cannot be started from clients until a host key is generated. After a host key is generated, clients can start sessions. When a host key is generated, it is saved to the flash memory of all management modules. The time to initially generate SSH keys varies depending on the configuration, and can be from a under a minute to several minutes.

To disable SSH, you delete all of the host keys from the device. When a host key is deleted, it is deleted from the flash memory of all management modules.

An RSA key with modulus 2048 must be used in FIPS or Common Criteria mode.

Examples

The following example generates a client RSA key pair with a modulus size of 2048 bits.

```
device# configure terminal
device(config)# crypto key generate rsa modulus 2048
```

The following example generates an elliptical key pair named testkey with the default size of 384 bits.

```
device# configure terminal
device(config)# crypto key generate ec label testkey
```

History

Release version	Command history
09.0.00	This command has been modified to remove the **modulus 1024** option and make **modulus 2048** the default. The **dsa** keyword was removed.
09.0.10b	This command was modified to support ECDSA.

crypto key zeroize

Deletes the crypto host key pair from the flash memory.

Syntax

crypto key zeroize [**ec** | **rsa**] [**label** *label_name*]

Command Default

SSH is not enabled and the host key pair is saved in the flash memory.

Parameters

ec

Deletes the ECDSA host key pair.

rsa

Deletes the RSA host key pair.

Modes

Global configuration mode

Usage Guidelines

When a host key is generated, it is saved to the flash memory of all management modules. The time to initially generate SSH keys varies depending on the configuration, and can be from a under a minute to several minutes. To disable SSH, you delete all of the host keys from the device. When a host key is deleted, it is deleted from the flash memory of all management modules.

The **crypto key zeroize** command, with or without the key pair specified, will kill all the active ssh connections irrespective of the host key pair (**ec** or **rsa**) used to establish the sessions. After you use the **crypto key zeroize** command, RUCKUS recommends that you reestablish the ssh session with the configured host key.

Examples

The following example deletes the ECDSA key pair.

```
device(config)# crypto key zeroize ec
```

The following example deletes the RSA key pair.

```
device(config)# crypto key zeroize rsa
```

The following example deletes both ECDSA and RSA key pairs from flash memory.

```
device(config)# crypto key zeroize
```

crypto openssl default-encoding

Modifies the OpenSSL string encoding method from UTF8string to the default method, which is printable string.

Syntax

crypto openssl default-encoding

no crypto openssl default-encoding

Command Default

OpenSSL uses UTF8string as the string encoding method by default.

Modes

Global configuration mode

Usage Guidelines

Use this command to enable OpenSSL to modify the string encoding method from UTF8string to the default method, which is printable string.This configuration is needed only in the case of a CA server that does not support the UTF8 string format. This can be identified when a device attempts to enroll its own certificate with the CA server. A CA server that does not support the UTF8 string format may return error saying "Invalid password".

The **no** form of the command modifies the OpenSSL string encoding method from the default printable string to the UTF8string format.

Examples

The following example modifies the OpenSSL string encoding method from UTF8string to the default method (printable string).

```
device# configure terminal
device(config)# crypto openssl default-encoding
```

History

Release version	Command history
09.0.10b	This command was introduced.

cycle-time

Sets a limit as to how many seconds users have to be authenticated by Web Authentication.

Syntax

cycle-time *seconds*

no cycle-time *seconds*

Command Default

The default is 600 seconds.

Parameters

seconds

Specifies the authentication cycle time. Valid values are from 0 through 3600 seconds. If the value is set to 0, then there is no limit.

Modes

Web Authentication configuration mode

Usage Guidelines

You can set a limit as to how many seconds users have to be authenticated by the Web Authentication by defining a cycle time. This time begins upon the first Login attempt by the user on the Login page. If the user has not been authenticated successfully when this time expires, the user must enter a valid URL again to display the Web Authentication Welcome page.

The **no** form of the command resets the time to the default.

Examples

The following example sets the cycle time to 100 seconds.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# cycle-time 100
```

Commands D through H

dampening

Sets dampening parameters for the route in BGP address-family mode.

Syntax

dampening { *half-life reuse suppress max-suppress-time* | **route-map** *route-map* }

no dampening

Parameters

half-life

Number of minutes after which the route penalty becomes half its value. Range is from 1 through 45. Default is 15.

reuse

Minimum penalty below which the route becomes usable again. Range is from 1 through 20000. Default is 750.

suppress

Maximum penalty above which the route is suppressed by the device. Range is from 1 through 20000. Default is 2000.

max-suppress-time

Maximum number of minutes a route can be suppressed by the device. Default is 40.

route-map

Enables selection of dampening values established in a route map by means of the **route-map** command.

route-map

Name of the configured route map.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

Use the **no** form of this command to disable dampening.

Use **dampening** without operands to set default values for all dampening parameters.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

To use the dampening values established in a route map, configure the route map first, and then enter the **route-map** command, followed by the name of the configured route map.

A full range of dampening values (*half-life*, *reuse*, *suppress*, *max-suppress-time*) can also be set by means of the **set as-path prepend** command.

Examples

This example enables default dampening as an IPv4 address-family function.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# dampening
```

This example changes all the dampening values as an IPv6 address-family function.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# dampening 20 200 2500 40
```

This example applies the dampening half-life established in a route map, configures the route map using the **set dampening** command.

```
device# configure terminal
device(config)# route-map myroutemap permit 1
device(config-route-map myroutemap)# set dampening 20
```

database-overflow-interval (OSPFv2)

Configures frequency for monitoring database overflow.

Syntax

database-overflow-interval *interval*

no database-overflow-interval

Command Default

0 seconds. If the device enters OverflowState, you must reboot before the device leaves this state.

Parameters

interval

Time interval at which the device checks to see if the overflow condition has been eliminated. Valid values range from 0 through 86400 seconds.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

This command specifies how long a device that has entered the OverflowState waits before resuming normal operation of external LSAs. However, if the external link state database (LSDB) is still full, the device lapses back into OverflowState. If the configured value of the database overflow interval is zero, then the device never leaves the database overflow condition.

When the maximum size of the LSDB is reached (this is a configurable value in the *external-lsdb-limit* CLI), the device enters OverflowState. In this state, the device flushes all non-default AS-external-LSAs that the device had originated. The devie also stops originating any non-default external LSAs. Non-default external LSAs are still accepted if there is space in the database after flushing. If no space exists, the Non-default external LSAs are dropped and not acknowledged.

The **no** form of the command disables the overflow interval configuration.

Examples

The following example configures a database-overflow interval of 60 seconds.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# database-overflow-interval 60
```

database-overflow-interval (OSPFv3)

Configures frequency for monitoring database overflow.

Syntax

database-overflow-interval *interval*

no database-overflow-interval

Command Default

10 seconds. If the router enters OverflowState, you must reboot before the router leaves this state.

Parameters

interval

Time interval at which the device checks to see if the overflow condition has been eliminated. Valid values range from 0 through 86400 seconds (24 hours).

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

This command specifies how long after a router that has entered the OverflowState before it can resume normal operation of external LSAs. However, if the external link state database (LSDB) is still full, the router lapses back into OverflowState.

When the maximum size of the LSDB is reached (this is a configurable value in the *external-lsdb-limit* CLI), the router enters OverflowState. In this state, the router flushes all non-default AS-external-LSAs that the router had originated. The router also stops originating any non-default external LSAs. Non-default external LSAs are still accepted if there is space in the database after flushing. If no space exists, the Non-default external LSAs are dropped and not acknowledged.

If the configured value of the database overflow interval is 0, then the device never leaves the database overflow condition.

The **no** form of the command disables the overflow interval configuration.

Examples

The following example configures a database-overflow interval of 120 seconds.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# database-overflow-interval 120
```

dead-interval

Configures the interval for which a Virtual Router Redundancy Protocol (VRRP) backup router waits for a hello message from the VRRP master router before determining that the master is offline. When backup routers determine that the master is offline, the backup router with the highest priority becomes the new VRRP master router.

Syntax

dead-interval [**msec**] *interval*

no dead-interval [**msec**] *interval*

Command Default

The default dead interval is internally derived from the hello interval. It is equal to 3 times the hello interval plus the skew time, where the skew time is equal to (256 minus the priority) divided by 256.

Parameters

msec *interval*

Sets the interval, in milliseconds, for which a VRRP backup router waits for a hello message from the VRRP master router before determining that the master is offline. Valid values range from 100 through 84000. The default value is 1000. VRRP-E does not support the dead interval in milliseconds.

interval

Sets the interval, in seconds, for which a VRRP backup router waits for a hello message from the VRRP master router before determining that the master is offline. Valid values range from 1 through 84. The default value is 1.

Modes

VRID interface configuration mode

Usage Guidelines

By default, the dead interval is internally derived from the hello interval. It is equal to 3 times the hello interval plus the skew time, where the skew time is equal to (256 minus the priority) divided by 256. Generally, if you change the hello interval on the VRRP master device using the **hello-interval** command, you should also change the dead interval on the VRRP backup devices using the **dead-interval** command.

A VRRP master router periodically sends hello messages to the backup routers. The backup routers use the hello messages as verification that the master is still online. If the backup routers stop receiving the hello messages for the period of time specified by the dead interval, the backup routers determine that the master router is offline. At that point, the backup router with the highest priority becomes the new master router.

The **dead-interval** command is configured only on VRRP backup routers and is supported by VRRP and VRRP-E.

The **no** form resets the dead interval to its default value of 1000 milliseconds (1 second).

NOTE
VRRP-E does not support the hello message interval in milliseconds.

Examples

The following example sets a waiting period of 25000 milliseconds before a VRRP backup router determines that a VRRP master router is offline.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# backup priority 40 track-priority 10
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.5.99
device(config-if-e1000-1/1/6-vrid-1)# dead-interval msec 25000
device(config-if-e1000-1/1/6-vrid-1)# activate
```

The following example sets a waiting period of 25 seconds before a VRRP-E backup router determines that a VRRP master router is offline.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/5
device(conf-if-e1000-1/1/5)# ip address 10.53.5.3/24
device(conf-if-e1000-1/1/5)# ip vrrp-extended vrid 2
device(conf-if-e1000-1/1/5-vrid-2)# backup priority 50 track-priority 10
device(conf-if-e1000-1/1/5-vrid-2)# ip-address 10.53.5.1
device(conf-if-e1000-1/1/5-vrid-2)# dead-interval 25
device(conf-if-e1000-1/1/5-vrid-2)# activate
```

dead-interval (VSRP)

Configures the number of seconds a backup waits for a Hello message from the master before determining that the master is dead.

Syntax

dead-interval *number*

no dead-interval *number*

Command Default

The default time interval for the backup to wait for the Hello message from the master is 3 seconds.

Parameters

number

Specifies the time interval for which the backup waits for the Hello message from the master. The time interval range is from 1 through 84 seconds.

Modes

VSRP VRID configuration mode

Usage Guidelines

The **no** form of the command resets the time interval to the default value.

Examples

The following example shows how to change the dead interval.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# dead-interval 30
```

decnet-proto

Configures the DECnet protocol VLAN.

Syntax

decnet-proto [**name** *string*]

no decnet-proto [**name** *string*]

Command Default

The DECnet protocol VLAN is not configured.

Parameters

name *string*

Specifies the name of the DECnet protocol VLAN that you want to configure. The name can be up to 32 characters in length.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command removes the DECnet protocol VLAN.

Examples

The following example shows how to configure a DECnet protocol VLAN.

```
device(config)# vlan 2
device(config-vlan-2)# decnet-proto name Red
device(config-vlan-decnet-proto)# no dynamic
```

default-acl

Configures the default ACL for failed, timed-out, or guest user sessions.

Syntax

default-acl { **ipv4** | **ipv6** } [*acl-id* |*acl-name*] [**in** | **out**]

no default-acl { **ipv4** | **ipv6** } [*acl-id* |*acl-name*] [**in** | **out**]

Parameters

ipv4
Specifies an IPv4 AC.

ipv6
Specifies an IPv6 ACL.

acl-id
ID of standard or numbered ACL (IPv4 only).

acl-name
Name or extended name of the ACL.

in
Specifies incoming authentication.

out
Specifies outgoing authentication.

Modes

Flexible-authentication configuration sub-mode

Usage Guidelines

Use the **no** form of the command to remove the configurable default ACL.

Use the command to configure a default ACL to be applied to users who failed (restricted VLAN), timed out (critical VLAN), or are guests (not capable of dot1x authentication).

NOTE
Dynamic modification of a default ACL by adding or deleting ACL rules is not supported. To modify a default ACL, you must first clear the session.

Examples

The following example configures the default IPv4 ACL called guests for inbound authentication.

```
device# configure terminal
device(conf)# authentication
device(conf-authen)# default-acl ipv4 guest in
```

History

Release version	Command history
08.0.70	This command was introduced.

default-information-originate (BGP)

Configures the device to originate and advertise a default BGP4 or BGP4+ route.

Syntax

default-information-originate

no default-information-originate

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Use the **no** form of this command to restore the default.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

This example originates and advertises a default BGP4 route for the default VRF.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# default-information-originate
```

This example originates and advertises a default BGP4 route for VRF “red”

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# default-information-originate
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

default-information-originate (OSPFv2)

Controls distribution of default information to an OSPFv2 device.

Syntax

default-information-originate [**always**] [**metric** *metric*] [**metric-type** { **type1** | **type2** }] [**route-map** *name*]

no default-information-originate

Command Default

The default route is not advertised into the OSPFv2 domain.

Parameters

always

Always advertises the default route. If the route table manager does not have a default route, the router advertises the route as pointing to itself.

metric *metric*

Specifies the cost for reaching the rest of the world through this route. If you omit this parameter and do not specify a value using the *default-metric* router configuration command, a default metric value of 10 is used. Valid values range from 1 through 65535. The default is 10.

metric-type

Specifies how the cost of a neighbor metric is determined. The default is **type1**. However, this default can be changed with the **metric-type** command.

type1

Type 1 external route.

type2

Type 1 external route,

route-map *name*

Specifies that the default route is generated if the route map is satisfied. This parameter overrides other options. If the **set metric** and **set metric-type** commands are specified in the route-map, the command-line values of metric and metric-type if specified, are “ignored” for clarification.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

This configuration provides criteria for the redistribution of any default routes found in the route table manager (RTM),whether static or learned from another protocol, to its neighbors.

The corresponding route-map should be created before configuring the **route-map** option, along with the **default-information-originate** command. If the corresponding route-map is not created beforehand, an error message is displayed stating that the route-map must be created.

The route-map option cannot be used with a non-default address in the match conditions. The default route LSA is not generated if a default route is not present in the routing table and a **match ip address** condition for an existing non-default route is configured in the route-map. The **match ip address** command in the route-map is a no-op operation for the default information originate command.

A device does not inject the default route into an NSSA by default and this command does not cause the device to inject the default route into the NSSA. To inject the default route into an NSSA, use the **area nssa default-information-originate** command.

The **no** form of the command disables default route origination.

Examples

The following example creates and advertises a default route with a metric of 30 and a type 1 external route.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# default-information-originate metric 30 metric-type type1
```

default-information-originate (OSPFv3)

Controls distribution of default information to an OSPFv3 device.

Syntax

default-information-originate [**always**] [**metric** *metric*] [**metric-type** { **type1** | **type2** }]

no default-information-originate

Command Default

The default route is not advertised into the OSPFv3 domain.

Parameters

always

Always advertises the default route. If the route table manager (RTM) does not have a default route, the router advertises the route as pointing to itself.

metric *metric*

Used for generating the default route, this parameter specifies the cost for reaching the rest of the world through this route. If you omit this parameter, the value of the **default-metric** command is used for the route. Valid values range from 1 through 65535.

metric-type

Specifies the external link type associated with the default route advertised into the OSPF routing domain.

type1

The metric of a neighbor is the cost between itself and the router plus the cost of using this router for routing to the rest of the world.
If you do not use this option, the default redistribution metric type is used for the route type.

type2

The metric of a neighbor is the total cost from the redistributing routing to the rest of the world.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

This configuration provides criteria for the redistribution of any default routes found in the RTM (whether static or learned from another protocol) to its neighbors.

If you specify a metric and metric type, the values are used even if you do not use the always option.

The **no** form of the command disables default route origination.

Examples

The following example specifies a metric of 20 for the default route redistributed into the OSPFv3 routing domain and an external metric type of Type 2.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# default-information-originate metric 20 metric-type type2
```

default-local-preference

Enables setting of a local preference value to indicate a degree of preference for a route relative to that of other routes.

Syntax

default-local-preference *num*

no default-local-preference

Parameters

num

Local preference value. Range is from 0 through 65535. The default is 100.

Modes

BGP configuration mode

Usage Guidelines

Local preference indicates a degree of preference for a route relative to that of other routes. BGP4 neighbors can send the local preference value as an attribute of a route in an UPDATE message.

Examples

The following example sets the local preference value to 200.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# default-local-preference 200
```

default-metric (BGP)

Changes the default metric used for redistribution.

Syntax

default-metric *value*

no default-metric

Command Default

The default metric value is 1.

Parameters

value

Metric value. Range is from 0 through 65535. The default metric value is 1.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

Use the **no** form of this command to restore the default.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

This example changes the default metric used for redistribution to 100.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# default-metric 100
```

default-metric (OSPF)

Sets the default metric value for the OSPFv2 or OSPFv3 routing protocol.

Syntax

default-metric *metric*

no default-metric

Parameters

metric

OSPF routing protocol metric value. Valid values range from 1 through 65535. The default is 10.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

This command overwrites any incompatible metrics that may exist when OSPFv2 or OSPFv3 redistributes routes. Therefore, setting the default metric ensures that neighbors will use correct cost and router computation.

The **no** form of the command restores the default setting.

Examples

The following example sets the default metric to 20 for OSPF.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# default-metric 20
```

default-metric (RIP)

Changes the RIP metric the router assigns by default to redistributed routes.

Syntax

default-metric *value*

no default-metric *value*

Command Default

By default, a metric of 1 is assigned to each route that is redistributed into RIP.

Parameters

value

Specifies a numeric value from 1 through 15 that is assigned to each route redistributed into RIP.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command returns the value of the default-metric to 1.

As its default-metric increases, the less likely a route is to be used.

Examples

The following example sets the default metric for all RIP routes on the device to 10.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# default-metric 10
```

The following example returns the default metric set in the previous example to the system default (1).

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# no redistribute connected metric 10
```

default-passive-interface

Marks all OSPFv2 and OSPFv3 interfaces passive by default.

Syntax

default-passive-interface

no default-passive-interface

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

When you configure the interfaces as passive, the interfaces drop all the OSPFv2 and OSPFv3 control packets.

You can use the **ip ospf active** and **ip ospf passive** commands in interface subconfiguration mode to change active/passive state on specific OSPFv2 interfaces. You can use the **ipv6 ospf active** and **ipv6 ospf passive** commands in interface subconfiguration mode to change the active and passive state on specific OSPFv3 interfaces.

The **no** form of the command disables the passive state.

Examples

The following example marks all OSPFv2 interfaces as passive.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# default-passive-interface
```

The following example marks all OSPFv3 interfaces as passive for VRF “red”.

```
device# configure terminal
device(config)# ipv6 router ospf vrf red
device(config-ospf6-router-vrf-red)# default-passive-interface
```

default-vlan-id

Changes the default VLAN ID.

Syntax

default-vlan-id *vlan-id*

no default-vlan-id *vlan-id*

Command Default

The default VLAN ID is 1.

Parameters

vlan-id

Specifies the VLAN ID that you want to configure as the default. Valid VLAN ID values are from 1 through 4095.

Modes

Global configuration mode

Usage Guidelines

You must specify a valid VLAN ID that is not already in use. For example, if you have already defined VLAN 10, you cannot use "10" as the new VLAN ID for the default VLAN.

NOTE
This command does not change the properties of the default VLAN. Changing the name allows you to use the VLAN ID "1" as a configurable VLAN.

The **no** form of the command resets the VLAN ID to the default.

Examples

The following example shows how to change the default VLAN ID.

```
device(config)# default-vlan-id 4095
```

delay-notifications

Configures the delay time for notifying the Layer 3 protocols of the VE down event.

Syntax

delay-notifications *value*

no delay-notifications *value*

Command Default

The delay time is not configured.

Parameters

value

The time to delay the notification of the VE down event. The value can range from 1 through 60 seconds.

Modes

VE interface configuration mode

Usage Guidelines

When all the ports in the VLAN go into the non-forwarding state, the device waits for the configured time before notifying the Layer 3 protocols of the VE down event. Once the timer expires, if the ports remain in the non-forwarding state, the device notifies the Layer 3 protocols of the VE down event.

If any of the ports comes into the forwarding state before the timer expires, the device cancels the existing timer for the VE down event.

The **no** form of the command removes the configured delay time.

Examples

The following example shows configuring the delay time on interface 50 to 20 seconds.

```
device(config)#  interface ve 50
device(config-vif-50)# delay-notifications 20
```

History

Release version	Command history
08.0.30b	This command was introduced.

delete-all

Deletes all user records from a local user database.

Syntax

delete-all

Modes

Local user database configuration mode

Examples

The following example deletes all user records from the local user database "localdb1".

```
device(config)# local-userdb localdb1
device(config-localuserdb-localdb1)# delete-all
```

deny (Extended IPv4 ACLs and IPv6 ACLs)

Inserts filtering rules to deny packets in IPv4 extended named or numbered access-lists (ACLs) or IPv6 ACLs.

Syntax

Use the following syntax to define a TCP or UDP rule that will deny packets:

[**no**]**deny**{**tcp**|**udp**}{[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**}{[*source-comparison-operators*] {[**host**]*Destination_IPaddress*[*mask*]|*Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[**established**][*destination-comparison-operators*][**precedence**{*precedence-name*|*precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*] [**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define an ICMP rule that will deny packets:

[**no**]**denyicmp**{[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**}{[**host**]*Destination_IPaddress*[*mask*]| *Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[*icmp-num*|*icmp-type*][**precedence**{*precedence-name*|*precedence-value*}] [**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define a rule for protocols other than TCP, UDP, or ICMP that will deny packets:

[**no**]**deny***ip-protocol* {[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**} {[**host**]*Destination_IPaddress*[*mask*]|*Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[**precedence**{*precedence-name*| *precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax in IPv6 ACLs to define a rule for protocols to deny packets, using either a protocol abbreviation available for IPv6 ACLs or a protocol number:

[**no**]**deny***ip-protocol* {[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**} {[**host**]*Destination_IPaddress*[*mask*]|*Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[**dscp-matching***dscp-value*][**routing**] [**fragments**][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**traffic-policy***name*][**log**][**mirror**]

no sequence*seq-num*

Parameters

ip-protocol

Specifies the type of IPv4 packet to filter. You can either specify a protocol number (from 0 through 255) or a supported protocol name. For a complete list of protocols, type **?** after **deny**. Supported protocols include:

- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **igrp**—Internet Gateway Routing Protocol
- **ip**—any IPv4 protocol
- **ospf**—Open Shortest Path First
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

Source_IPaddress
Specifies a source address for which you want to filter the subnet.

mask
Defines a mask, whose effect is to specify a subnet that includes the source address that you specified. For options to specify the mask, see the Usage Guidelines.

host
Depending on placement in the command, specifies the source or destination as a host.

Source_hostname
Specifies the known hostname of the source host.

Destination_hostname
Specifies the known hostname of the destination host.

any
Specifies all source addresses.

source-comparison-operators and *destination-comparison-operators*
If you specified **tcp** or **udp**, the following optional operators are available:

eq
Specifies the address is equal to the port name or number you enter after **eq**.

gt
Specifies port numbers that are equal to or greater than the port number or that are equal to or greater than the numeric equivalent of the port name you enter after **gt**.

lt
Specifies port numbers that are equal to or less than the port number or that are equal to or less than the numeric equivalent of the port name you enter after **lt**.

neq
Specifies all port numbers except the port number or port name you enter after **neq**.

range
Specifies all port numbers that are between the first port name or number and the second name or number you enter following the **range** keyword. Enter the range as two values separated by a space. The first port number in the range must be less than the last number in the range. For example, to apply the policy to all ports between and including 23 (Telnet) and 53 (DNS), enter the following: 23 53 .

Destination_IPaddress
Specifies a destination address for which you want to filter the subnet.

mask
Defines a subnet mask that includes the destination address that you specified. For mask options, refer to the Usage Guidelines.

any
Specifies all destination addresses.

established
(For TCP rules only) Filter packets that have the Acknowledgment (ACK) or Reset (RST) flag set. This policy applies only to established TCP sessions, not to new sessions.

icmp-num|icmp-type
(For ICMP only) Specifies a named or numbered message type.

icmp-num

Specifies a numbered message type. Use this format if the rule also needs to include **precedence**, **tos** , one of the DSCP options, one of the 802.1p options, **internal-priority-marking** , or **traffic-policy**.

any-icmp-type

Specifies any ICMP type.

echo

Specifies an echo request (ping).

echo-reply

Specifies an echo reply.

information-request

Specifies an information request.

mask-reply

Specifies an address mask reply.

mask-request

Specifies an address mask request.

parameter-problem

Specifies a parameter problem.

redirect

Specifies a redirect message.

source-quench

Specifies a relieve congestion message.

time-exceeded

Specifies a time exceeded message.

timestamp-reply

Specifies a timestamp reply.

timestamp-request

Specifies a timestamp request.

unreachable

Specifies a destination-unreachable message.

precedence{*precedence-name*|*precedence-value*}

Specifies a *precedence-name* or corresponding *precedence-value*, as follows:

0 or **routine**

Specifies routine precedence.

1 or **priority**

Specifies priority precedence.

2 or **immediate**

Specifies immediate precedence.

3 or **flash**

Specifies flash precedence.

4 or **flash-override**

Specifies flash-override precedence.

5 or **critical**
Specifies critical precedence.

6 or **internet**
Specifies internetwork control precedence.

7 or **network**
Specifies network control precedence.

tos{*tos-name*|*tos-value*}
Specifies a type of service (ToS). Enter either a supported *tos-name* or the equivalent *tos-value*.

0 or **normal**
Specifies normal ToS.

1 or **min-monetary-cost**
Specifies min monetary cost ToS.

2 or **max-reliability**
Specifies max reliability ToS.

4 or **max-throughput**
Specifies max throughput ToS.

8 or **min-delay**
Specifies min-delay ToS.

fragments
Filters on IPv6 fragments with a non-zero fragment offset. Available only in IPv6 ACLs.

routing
Filters on IPv6 packets routed from the source. Available only in IPv6 ACLs.

dscp-matching*dscp-value*
Filters by DSCP value. Values range from 0 through 63.

dscp-marking*dscp-value*
Assigns the DSCP value that you specify to the packet. Values range from 0 through 63.

802.1p-priority-matching *802.1p-value*
Filters by 802.1p priority, for rate limiting. Values range from 0 through 7.

802.1p-priority-marking *802.1p-value*
Assigns the 802.1p value that you specify to the packet. Values range from 0 through 7.

internal-priority-marking *queuing-priority*
Assigns the internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

802.1p-and-internal-marking *priority-value*
Assigns the identical 802.1p value and internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

traffic-policy*name*
Enables the device to limit the rate of inbound traffic and to count the packets and bytes per packet to which ACL deny clauses are applied. For configuration procedures and examples, refer to the chapter "Traffic Policies" in the *RUCKUS FastIron QOS and Traffic Management Configuration Guide*.

log
Enables SNMP traps and Syslog messages for the rule. In addition, logging must be enabled using the **logging enable** command.

mirror

Mirrors packets matching the rule.

Modes

IPv4 ACL configuration mode

IPv6 ACL configuration mode

Usage Guidelines

Extended ACLs deny traffic according to port protocol, source and destination addresses, and other IPv4 frame content. You can also enable logging and mirroring.

The order of the rules in an ACL is critical, as the first matching rule stops further processing.

NOTE

Although both IPv4 extended ACLs and IPv6 ACLs can reference any protocol by its protocol number, the available protocol abbreviations differ between IPv4 extended ACLs and IPv6 ACLs,

The following protocol abbreviations are available for IPv4 extended ACLs:

- esp
- gre
- icmp
- igmp
- ip
- ipv6
- ospf
- pim
- rsvp
- tcp
- udp

The following protocol abbreviations are available for IPv6 ACLs:

- ahp
- esp
- icmp
- ipv6
- sctp
- tcp
- udp

NOTE
A few filtering sub-options are available only in IPv4 or IPv6 ACLs.
The following filtering sub-options are available only in IPv4 extended ACLs:

- precedence
- tos
- 802.1p-and-internal-marking

The following filtering sub-options are available only in IPv6 ACLs:

- fragments
- routing

If you use a hostname to identify a source or destination address, the system resolves its IP address and displays only the IP address (without the associated hostname) in system output, for example, in **show** command output. Because the hostname is resolved as an IP address, it can be used in combination with a mask.

You can specify a mask in either of the following ways:

- Wildcard mask format (for example, 0.0.0.255). The advantage of this format is that it enables you mask any bit, for example by specifying 0.255.0.255.
- Classless Interdomain Routing (CIDR) format, in which you specify the number of bits of the prefix. For example, appending /24 to an IPv4 address is equivalent to specifying 0.0.0.255 in the wildcard mask format.

For IPv4 extended ACLs, the following sub-options are available in match statements when ICMP protocol is configured with an ICMP message type:

- **dscp-marking**
- **dscp-matching**
- **internal-priority-marking**
- **802.1p-priority-marking**
- **802.1p-priority-matching**
- **precedence**
- **tos**

For IPv6, the following sub-options are available in match statements for ICMP protocol and ICMP message type:

- **dscp-marking**
- **dscp-matching**

When specifying type of service (ToS), you can indicate multiple *tos-value* options by entering the sum of the needed ToS options. For example, to specify both **max-reliability** and **min-delay**, enter **10**. To specify all options, enter **15**. Values range from **0** through **15**.

In a rule that includes one or more of the following parameters, the **log** keyword is ignored:

- **dscp-matching**
- **dscp-marking**
- **802.1p-priority-matching**
- **802.1p-priority-marking**
- **802.1p-and-internal-marking**

For details on 802.1p priority matching, refer to "Inspecting the 802.1p bit in the ACL for adaptive rate limiting" in the *RUCKUS FastIron QoS and Traffic Management Configuration Guide*.

To delete a deny rule from an ACL, type **no** followed by the full command syntax.

Examples

The following ACL, applied to an Ethernet interface, blocks and logs IPv4 TCP packets transmitted by Telnet from a specified host.

```
device# configure terminal
device(config)# ip access-list extended block_telnet
device(config-ext-ipacl-block_telnet )# deny tcp host 10.157.22.26 any eq telnet log
device(config-ext-ipacl-block_telnet)# exit
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# ip access-group block_telnet in
```

deny (Standard IPv4 ACLs)

Inserts filtering rules in IPv4 standard named or numbered ACLs that will deny packets.

Syntax

deny{*Source_IPaddress*[*mask*]|**host** { *hostname*|*Source_IPaddress*[*mask*]}|**any**}[**log**][**mirror**]

no deny{*Source_IPaddress*[*mask*]|**host** { *hostname*|*Source_IPaddress*[*mask*]}|**any**}[**log**][**mirror**]

Parameters

Source_IPaddress
: Specifies a source address for which you want to filter the subnet.

mask
: Defines a subnet mask that includes the source address you specified.

host
: Indicates the source IP address is a host address.

hostname
: Specifies the known hostname associated with a particular source IP address.

Source_IPaddress
: Specifies source address.

any
: Specifies all source addresses.

log
: Enables logging for the rule. Used in conjunction with the **logging enable** command at the **ip access-list** command configuration level.

mirror
: Mirrors packets matching the rule.

Modes

IPv4 ACL configuration mode

Usage Guidelines

This command configures rules to drop traffic based on source addresses. You can also enable logging and mirroring.

Standard ACLs deny traffic according to source address only.

The order of the rules in an ACL is critical, as the first matching rule stops further processing. When creating rules, specifying sequence values determines the order of rule processing. If you do not specify a sequence value, the rule is added to the end of the list. Such a rule is automatically assigned the next multiple of 10 as a sequence number.

You can specify a mask in either of the following ways:

- Wildcard mask format. The advantage of this format is that it enables you to mask any bit, for example by specifying 0.255.0.255.
- Classless Interdomain Routing (CIDR) format—in which you specify the number of bits of the prefix. For example, appending /24 to an IPv4 address is equivalent to specifying 0.0.0.255 in the wildcard mask format.

For the **log** keyword to trigger a log entry, logging must be enabled with the **logging enable** command.

To delete a rule from an ACL, use the **no deny** command followed by the full command syntax.

Examples

The following example configures a standard numbered ACL with deny statements and applies it to incoming traffic on port 1/1/1.

```
device# configure terminal
device(config)# ip access-list standard 4
device(config-std-ipacl-standard-4)# deny host 10.157.22.26 log
device(config-std-ipacl-standard-4)# deny 10.157.29.12 log
device(config-std-ipacl-standard-4)# deny host IPHost1 log
device(config-std-ipacl-standard-4)# permit any
device(config-std-ipacl-standard-4)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip access-group 4 in
```

description (IKEv2)

Describes an Internet Key Exchange version 2 (IKEv2) profile.

Syntax

description *text-string*

no description

Command Default

An IKEv2 profile description is not configured.

Parameters

text-string

Specifies the IKEv2 profile description. The string must be from 1 through 64 ASCII characters in length.

Modes

IKEv2 profile configuration mode

Usage Guidelines

Configuring a profile description is optional, but in a complex network configuration with a number of IKEv2 profiles, a profile description can help to identify a specific profile.

The **no** form of the command removes the IKEv2 profile description.

Examples

The following example shows how to configure a description for an IKEv2 profile named prof-dept1.

```
device(config)# ikev2 profile prof_dept1
device(config-ike-profile-prof_dept1)# descripton PersonnelDepartmentUSA
```

History

Release version	Command history
08.0.50	This command was introduced.

destination-ip

Sets the destination IP address of an ERSPAN mirror.

Syntax

destination-ip *ip-addr*

no destination-ip *ip-addr*

Command Default

A destination IP is not configured for the ERSPAN profile.

Parameters

ip-addr

Specifies the IP address in the format A.B.C.D.

Modes

Monitor profile mode

Usage Guidelines

The destination IP address is the IP address for the remote host that is collecting the mirrored traffic, not the switch.

The **no** form of the command removes the IP address from the monitor profile.

Examples

The following example sets the destination IP address in ERSPAN profile 3.

```
device(config)# monitor-profile 3 type ERSPAN
device(config-monitor-profile 3)# destination-ip 1.1.1.1
device(config-monitor-profile 3)# exit
```

History

Release version	Command history
08.0.40	This command was introduced.

dhcp-default-router

Specifies the IP addresses of the default routers for a client.

Syntax

dhcp-default-router *address*

Parameters

address

Specifies the IP address of the default router.

Modes

DHCP server pool configuration mode

Examples

The following example specifies the IP address of the default router for a client.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# dhcp-default-router 10.2.1.143
```

dhcp-gateway-list

Configures a gateway list when DHCP Assist is enabled on a Layer 2 switch.

Syntax

dhcp-gateway-list *num ip-address*

Parameters

num

Specifies the number of the gateway list.

ip-address

Specifies the gateway IP address.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

Up to eight addresses can be defined for each gateway list in support of ports that are multi-homed. When multiple IP addresses are configured for a gateway list, the Layer 2 switch inserts the addresses into the discovery packet in a round-robin fashion. Up to 32 gateway lists can be defined for each Layer 2 switch.

Examples

The following commands configure a gateway list.

```
device(config)# dhcp-gateway-list 1 10.95.5.1
device(config)# dhcp-gateway-list 2 10.95.6.1
device(config)# dhcp-gateway-list 3 10.95.1.1 10.95.5.1
device(config)# interface ethernet 2
device(config-if-e1000-2)# dhcp-gateway-list 1
device(config-if-e1000-2)# interface ethernet 8
device(config-if-e1000-8)# dhcp-gateway-list 3
device(config-if-e1000-8)# interface ethernet 14
device(config-if-e1000-14)# dhcp-gateway-list 2
```

dhcp snooping client-learning disable

Disables DHCP client learning on an individual port or range of ports.

Syntax

dhcp snooping client-learning disable

no dhcp snooping client-learning disable

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of the command to re-enable DHCP client learning on a port once it has been disabled.

Examples

The following example disables DHCP client learning on an individual port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# dhcp snooping client-learning disable
```

The following example disables DHCP client learning on a range of ports.

```
device(config)# interface ethernet 1/1/1 to 1/1/5
device(config-mif-1/1/1-1/1/5)# dhcp snooping client-learning disable
```

History

Release version	Command history
08.0.40	This command was modified to include enabling DHCP client learning on a range of ports.

dhcp snooping relay information

Enables DHCP snooping relay information (DHCP Option 82) on an interface.

Syntax

dhcp snooping relay information

no dhcp snooping relay information

Command Default

DHCP option 82 is automatically enabled when DHCP snooping is enabled on the VLAN.

Modes

Interface configuration mode

Usage Guidelines

When DHCP snooping is enabled using the **ip dhcp snooping vlan** command, DHCP option 82 is automatically enabled on a VLAN. The **dhcp snooping relay information** command disables or re-enables DHCP option 82 for a specified interface on the VLAN.

The **no** form of the command disables DHCP option 82 for an interface.

Examples

The following example disables DHCP option 82 on a specified interface after it was automatically enabled when DHCP snooping was enabled on the VLAN.

```
device# configure terminal
device(config)# ip dhcp snooping vlan 100
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# no dhcp snooping relay information
```

The following example re-enables DHCP option 82 on a specified interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# dhcp snooping relay information
```

dhcp snooping relay information circuit-id

Configures a unique circuit ID per port.

Syntax

dhcp snooping relay information circuit-id *ASCII-string*

no dhcp snooping relay information circuit-id *ASCII-string*

Parameters

ASCII-string

Specifies the ASCII-string. The string can be up to 63 characters in length.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables circuit ID processing if it has been enabled.

Examples

The following example enables the circuit ID per port.

```
device(config)# ip dhcp snooping vlan 1
device(config)# interface ethernet 1/1/4
device(config-if-e1000-1/1/4)# dhcp snooping relay information circuit-id Brcd01
```

History

Release version	Command history
08.0.50	This command was introduced.

dhcp snooping relay information remote-id

Configures a unique remote ID per port.

Syntax

dhcp snooping relay information remote-id *ASCII-string*

no dhcp snooping relay information remote-id *ASCII-string*

Parameters

ASCII-string

Specifies the ASCII-string. The string can be up to 63 characters in length.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables the remote ID processing once it is enabled.

Use the **show interfaces ethernet** command to view the remote ID configured on a port.

Examples

The following example enables the remote ID per port.

```
device(config)# ip dhcp snooping vlan 1
device(config)# interface ethernet 1/1/4
device(config-if-e1000-1/1/4)# dhcp snooping relay information remote-id remote01
```

History

Release version	Command history
08.0.50	This command was introduced.

dhcp snooping relay information subscriber-id

Configures a unique subscriber ID per port or on a range of ports.

Syntax

dhcp snooping relay information subscriber-id *ASCII-string*

no dhcp snooping relay information subscriber-id *ASCII-string*

Parameters

ASCII-string

Specifies the ASCII-string. The string can be up to 50 alphanumeric characters in length.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables SID processing once it is enabled.

Use the **show interfaces ethernet** command to view the subscriber ID configured on a port or a range of ports.

Examples

The following example enables a unique subscriber ID per port.

```
device(config)# ip dhcp snooping vlan 1
device(config)# interface ethernet 1/1/4
device(config-if-e1000-1/1/4)# dhcp snooping relay information subscriber-id Brcd01
```

The following example enables a unique subscriber ID on a range of ports.

```
device(config)# interface ethernet 1/1/1 to 1/1/5
device(config-mif-1/1/1-1/1/5)# dhcp snooping relay information subscriber-id Brcd01
```

History

Release version	Command history
08.0.40	This command was modified to include enabling a unique subscriber ID on a range of ports.

dhcp snooping trust

Enables trust on a port connected to a DHCP server.

Syntax

dhcp snooping trust

no dhcp snooping trust

Command Default

The default trust setting for a port is untrusted.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables the trust setting.

Examples

The following example sets the trust setting of port 1/1/1 to trusted.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# dhcp snooping trust
```

dhcp6 snooping trust

Enables trust on a port connected to a DHCPv6 server.

Syntax

dhcp6 snooping trust

no dhcp6 snooping trust

Command Default

The default trust setting for a port is untrusted

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables trust on the port.

Examples

The following example enables trust on a port connected to a DHCPv6 server.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# dhcp6 snooping trust
```

dhgroup

Configures a Diffie-Hellman (DH) group for an Internet Key Exchange version 2 (IKEv2) proposal.

Syntax

dhgroup { **14** | **19** | **20** }

no dhgroup { **14** | **19** | **20** }

Command Default

The default DH group is 20.

Parameters

14

Specifies the 2048-bit modular exponential (MODP) DH group.

19

Specifies the 256-bit elliptical curve DH (ECDH) group.

20

Specifies the 384-bit ECDH group.

Modes

IKEv2 proposal configuration mode

Usage Guidelines

Diffie-Hellman negotiations are a part of the IKEv2 negotiations used to establish a secure communications channel.

Multiple DH groups may be configured for an IKEv2 proposal.

When only one DH group is configured for an IKEv2 proposal, removing it restores the default configuration.

The **no** form of the command removes the specified DH group configuration.

Examples

The following example configures the 2048-bit MODP DH group (14) for an IKEv2 proposal named ikev2_proposal.

```
device(config)# ikev2 proposal ikev2_proposal
device(config-ikev2-proposal-ikev2_proposal)# dhgroup 14
```

History

Release version	Command history
08.0.50	This command was introduced.

diagnostics (MRP)

Enables diagnostics on a metro ring.

Syntax

diagnostics

no diagnostics

Command Default

Diagnostics are disabled by default.

Modes

Metro ring configuration mode

Usage Guidelines

This command is valid only on the master node.

When you enable Metro Ring Protocol (MRP) diagnostics, the software tracks Ring Health Packets (RHPs) according to their sequence numbers and calculates how long it takes an RHP to travel one time through the entire ring. The calculated results have a granularity of 1 microsecond. When you display the diagnostics, the output shows the average round-trip time for the RHPs sent since you enabled diagnostics.

The **no** form of the command disables the diagnostics for the ring.

Examples

The following example enables the diagnostics for metro ring 1.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-1)# diagnostics
```

disable (LAG)

Disables the individual ports within a LAG.

Syntax

disable port-name *name*

disable ethernet *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]

Command Default

LAG ports are not enabled.

Parameters

port-name *name*
Disables a named port within a LAG.

ethernet *unit/slot/port*
Disables the Ethernet port within a LAG.

to *unit/slot/port*
Disables a range of ports within a LAG.

lag *lag-id*
Disables the LAG virtual interface.

Modes

LAG configuration mode

Usage Guidelines

To disable a port belonging to a keep-alive LAG, you must configure the **enable** command from the interface configuration mode.

Examples

The following example shows how to disable a port within a LAG.

```
device(config)# lag blue static id 1
device(config-lag-blue)# ports ethernet 1/1/1 ethernet 1/1/5
device(config-lag-blue)# disable ethernet 1/3/1
```

The following example shows how to disable a port within a keep-alive LAG.

```
device(config)# lag test keep-alive
device(config-lag-test)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# disable
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

disable (NTP)

Disables NTP client and server mode.

Syntax

disable [**serve**]

no disable serve

Command Default

NTP is not enabled.

Parameters

serve

Disables serving the time to clients.

Modes

NTP configuration mode

Usage Guidelines

To enable client mode, use the **no disable** command. To enable the client and server mode, use the **no disable serve** command. The **no disable serve** command enables both the client and the server. If the client is already enabled and server is disabled, the **no disable server** enables the server.

If the **serve** keyword is specified, NTP does not serve the time to downstream devices. The **serve** keyword disables the NTP server mode functionalities. If the **serve** keyword is not specified, both NTP client mode and NTP server mode are disabled.

NOTE
The **disable** command disables NTP client and server mode; it does not remove the NTP configuration.

The **no** form of the command enables NTP client and server mode.

Examples

The following example disables the NTP server.

```
device(config)# ntp
device(config-ntp)# disable serve
```

disable (Port)

Disables a port.

Syntax

disable

Command Default

A port is enabled (active).

Modes

Interface configuration mode

Usage Guidelines

A port can be deactivated (disabled) or activated (enabled) using the **enable** command by selecting the appropriate status.

Examples

The following example disables or inactivate a port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# disable
```

disable (VSRP)

Disables the VSRP VRID for a port-based VLAN.

Syntax

disable

Command Default

The VSRP VRID is disabled by default.

Modes

VSRP VRID configuration mode

Examples

The following example shows how to disable the VSRP VRID on a VLAN.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup
device(config-vlan-200-vrid-1)# disable
```

disable authentication md5

Disables the MD5 authentication scheme for Network Time Protocol (NTP).

Syntax

disable authentication md5

no disable authentication md5

Command Default

If JITC is enabled, the MD5 authentication scheme is disabled. In the standard mode, the MD5 authentication scheme is enabled.

Modes

Global configuration mode

Usage Guidelines

In the standard mode, both SHA1 and MD5 authentication schemes are supported. If JITC is enabled, The MD5 authentication for Network Time Protocol (NTP) is disabled by default and the **disable authentication md5** command can be seen in the running configuration. In the JITC mode, only the SHA1 option is available. The SHA1 authentication scheme must be enabled manually to define the authentication key for NTP using the **authentication-key key-id** command.

The **no** form of the command enables the MD5 authentication scheme.

Examples

The following example disables the MD5 authentication scheme.

```
device(config)# disable authentication md5
```

History

Release version	Command history
08.0.20a	This command was introduced.

disable-aging

Disables aging of MAC sessions at the global level.

Syntax

disable-aging [**permitted-mac-only** | **denied-mac-only**]

no disable-aging [**permitted-mac-only** | **denied-mac-only**]

Command Default

Aging of MAC sessions is not disabled.

Parameters

permitted-mac-only

Prevents permitted (authenticated and restricted) sessions from being aged out and ages denied sessions.

denied-mac-only

Prevents denied sessions from being aged out, but ages out permitted sessions.

Modes

Authentication mode

Usage Guidelines

The **no** form of the command does not disable aging.

Use this command to disable the aging of MAC sessions. Use the **disable-aging** command in the authentication mode and the **authentication disable-aging** command at the interface level. The command entered at the interface level overrides the command entered at the authentication level.

Examples

The example disables aging for permitted MAC addresses.

```
device(config)# authentication
device(config-authen)# disable-aging permitted-mac-only
```

History

Release version	Command history
08.0.20	This command was introduced.

distance (BGP)

Changes the default administrative distances for eBGP, iBGP, and local BGP.

Syntax

distance *external-distance internal-distance local-distance*

no distance

Parameters

external-distance
: eBGP distance. Range is from 1 through 255.

internal-distance
: iBGP distance. Range is from 1 through 255.

local-distance
: Local BGP4 and BGP4+ distance. Range is from 1 through 255.

Modes

BGP configuration mode

Usage Guidelines

To select one route over another according to the source of the route information, the device can use the administrative distances assigned to the sources. The administrative distance is a protocol-independent metric that IP devices use to compare routes from different sources. Lower administrative distances are preferred over higher ones.

Examples

The following example configures the device to change the administrative distance.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# distance 100 150 200
```

distance (OSPF)

Configures an administrative distance value for OSPFv2 and OSPFv3 routes.

Syntax

distance { **external** | **inter-area** | **intra-area** } *distance*

no distance

Command Default

The administrative distance value for OSPFv2 and OSPFv3 routes is 110.

Parameters

external
Sets the distance for routes learned by redistribution from other routing domains.

inter-area
Sets the distance for all routes from one area to another area.

intra-area
Sets the distance for all routes within an area.

distance
Administrative distance value assigned to OSPF routes. Valid values range from 1 through 255. The default is 110.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

You can configure a unique administrative distance for each type of OSPF route.

The distances you specify influence the choice of routes when the device has multiple routes from different protocols for the same network. The device prefers the route with the lower administrative distance. However, an OSPFv2 or OSPFv3 intra-area route is always preferred over an OSPFv2 or OSPFv3 inter-area route, even if the intra-area route's distance is greater than the inter-area route's distance.

The **no** form of the commands reverts to the default setting.

Examples

The following example sets the distance value for all external routes to 125.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# distance external 125
```

The following example sets the distance value for intra-area routes to 80.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# distance intra-area 80
```

The following example sets the distance value for inter-area routes to 90.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# distance inter-area 90
```

distance (RIP)

Increases the administrative distance that the RIP router adds to routes.

Syntax

distance *num*

no distance *num*

Command Default

The default RIP administrative distance is 120.

Parameters

num

A decimal value from 1 through 255 that designates the administrative distance for all RIP routes.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command returns the administrative distance to the default value of 120.

Routes with lower administrative distance are more likely to be used when administrative distance is used for route comparison.

Examples

The following example sets the administrative distance for RIP routes to 140.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# distance 140
```

The following example returns the administrative distance for RIP routes set in the previous example to the default of 120.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# no distance 140
```

distribute-list prefix-list (OSPFv3)

Applies a prefix list to OSPF for IPv6 routing updates. Only routes permitted by the prefix-list can go into the routing table.

Syntax

distribute-list prefix-list *list-name* **in** [**ethernet** *unit/slot/port* | **lag** *lag-id* | **loopback** *number* | **tunnel** *number* | **ve** *virtual port number*]

no distribute-list prefix-list

Command Default

Prefix lists are not applied to OSPFv3 for IPv6 routing updates.

Parameters

list-name
: Name of a prefix-list. The list defines which OSPFv3 networks are to be accepted in incoming routing updates.

in
: Applies the prefix list to incoming routing updates on the specified interface.

ethernet *unit/slot/port*
: Specifies an Ethernet interface.

lag *lag-id*
: Specifies a LAG virtual interface.

loopback *number*
: Specifies a loopback interface and port number.

tunnel *number*
: Specifies a tunnel.

ve *virtual port number*
: Specifies a virtual Ethernet (VE) interface.

Modes

OSPFv3 router configuration mode

OSPFv3 VRF router configuration mode

Usage Guidelines

The **no** form of the command removes the prefix list.

Examples

The following example configures a distribution list that applies the filterOspfRoutes prefix list globally.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# distribute-list prefix-list filterOspfRoutes in
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

distribute-list prefix-list (RIPng)

Applies a prefix list to RIPng to control routing updates that are received or sent.

Syntax

distribute-list prefix-list *list-name* { **in** | **out** }

no distribute-list prefix-list *list-name* { **in** | **out** }

Command Default

Prefix lists are not applied to RIPng routing updates.

Parameters

list-name
: Specifies the prefix list to be applied.

in
: Applies the prefix list to incoming routing updates.

out
: Applies the prefix to outgoing routing updates.

Modes

RIPng router configuration mode.

Usage Guidelines

Use the **no** form of the command to remove the distribution list.

Examples

The first prefix list in the following example denies routes with the prefix beginning with 2001:db8:: if the prefix is longer than 64 bits. The second prefix list allows all other routes received.

```
device# configure terminal
device(config)# ipv6 prefix-list 2001routes deny 2001:db8::/64 le 128
device(config)# ipv6 prefix-list 2001routes permit ::/0 ge 0 le 128
device(config)# ipv6 router rip
device(config-ripng-router)# distribute-list prefix-list 2001routes in
```

distribute-list route-map

Creates a route-map distribution list.

Syntax

distribute-list route-map *map* **in**

no distribute-list route-map

Parameters

map
Specifies a route map.

in
Creates a distribution list for an inbound route map.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

The distribution list can filter Link State Advertisements (LSAs) received from other OSPF devices before adding the corresponding routes to the routing table.

The **no** form of the command removes the distribution list.

Examples

The following example creates a distribution list using a route map named filter1 that has already been configured.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# distribute-list route-map filter1 in
```

dlogger module

Enables module filter logging.

Syntax

dlogger module [*module-name* | **all**] **sub-module** [*sub-module-name* | **all**] [**stacktrace**] **severity** [*severity-level* | **all**]

no dlogger module [*module-name* | **all**] **sub-module** [*sub-module-name* | **all**] [**stacktrace**] **severity** [*severity-level* | **all**]

Command Default

The always-on logs (logs with high severity 0-4) are enabled by default.

Parameters

module-name
: Specifies the module for which the logs are filtered.

sub-module *sub-module-name*
: Specifies the corresponding sub-module of the selected module for which the logs are filtered.

severity *severity-level*
: Specifies the severity level by which logs are filtered.

stacktrace
: Specifies to enable stacktrace for debug.

Modes

Privileged EXEC mode

Usage Guidelines

The logs that are generated are logged in the Log Manager and also in the circular buffer maintained by the distributed logger module. You can view the logs using the **show logging debug** command or the **show dlogger logs** command.

Use the **dlogger module** command in conjunction with the **show logging debug** command to view the logs.

When you issue the **show logging debug** command, the modules and sub-modules must be specified based on the mapping of distributed logger modules to log manager displayed in the **show dlogger module filter lm-map** command output.

The **no** form of the command disables module filter logging.

Examples

The following example configures distributed logger and enables module filter logging for a specific module and its sub-module.

```
device# dlogger module sec_macsec sub-module cli severity all
```

History

Release version	Command history
09.0.00	This command was introduced.

dlogger redirect

Changes the distributed logger module log destination.

Syntax

dlogger redirect { **fi_debug** | **to_cir_buf** | **module** *module-name* **lm-module** *lm-module-name* **lm-sub-module** *lm-submodule-name* }

no dlogger redirect { **fi_debug** | **to_cir_buf** | **module** *module-name* **lm-module** *lm-module-name* **lm-sub-module** *lm-sub-module-name* }

Command Default

Distributed Logger module logs are logged into the log manager and circular buffer by default.

Parameters

fi_debug
Specifies to redirect the logs to fi_debug module.

to_cir_buf
Specifies to redirect the logs to circular buffer.

module *module-name*
Specifies the logger module name.

lm-module *lm-module-name*
Specifies the log manager module mapped to the selected logger module.

lm-sub-module *lm-sub-module-name*
Specifies the sub-module of the log manager module.

Modes

Privileged EXEC mode

Usage Guidelines

To find the mapping of distributed logger modules to log manager modules and sub-modules (lm-module module-name and lm-sub-module-name), issue the **show dlogger module filter lm-map** command.

The **no dlogger redirect to_cir_buf** command disables default logging behavior of sending the logs to the circular buffer. However, distributed logger continues to send logs of the registered module that have filtering capability to the log manager.

Examples

The following example redirects all distributed logger module logs to fi_debug.

```
device# dlogger redirect fi_debug
```

History

Release version	Command history
09.0.00	This command was introduced.

dns-filter

Defines Domain Name System (DNS) filters that will restrict DNS queries from unauthenticated hosts to be forwarded explicitly to defined servers.

Syntax

dns-filter *filter-id ip-address wildcard-bits*

no dns-filter *filter-id ip-address wildcard-bits*

Command Default

DNS filters are not defined.

Parameters

filter-id
: Defines the number to identify a DNS filter. The valid values are from 1 through 4.

ip-address
: Specifies the IP address (A.B.C.D) or IP address along with the prefix length (A.B.C.D/n) of unauthenticated hosts.

wildcard-bits
: Specifies a wildcard for the filter. The wildcard is in dotted-decimal notation (IP address format).

Modes

Web Authentication configuration mode

Usage Guidelines

Many of the Web Authentication solutions allow DNS queries to be forwarded from unauthenticated hosts. To eliminate the threat of forwarding DNS queries from unauthenticated hosts to unknown or untrusted servers (also known as domain-casting), you can restrict DNS queries from unauthenticated hosts to be forwarded explicitly to defined servers by defining DNS filters. Any DNS query from an unauthenticated host to a server that is not defined in a DNS filter is dropped. Only DNS queries from unauthenticated hosts are affected by DNS filters; authenticated hosts are not. If the DNS filters are not defined, then any DNS queries can be made to any server.

The wildcard is in dotted-decimal notation (IP address format). It is a four-part value, where each part is 8 bits (one byte) separated by dots, and each bit is a one or a zero. Each part is a number ranging from 0 to 255, for example 0.0.0.255. Zeros in the mask mean the packet source address must match the IP address. Ones mean any value matches. For example, the IP address and subnet-mask values 10.157.22.26 0.0.0.255 mean that all hosts in the Class C subnet 10.157.22.x match the policy.

The **no** form of the command removes the defined DNS filters.

Examples

The following example defines a DNS filter.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# dns-filter 2 192.168.10.1/24 0.0.0.255
```

dns-server (DHCPv6)

Specifies the IPv6 address of a Domain Name System (DNS) server.

Syntax

dns-server *ipv6-address* ...

Command Default

No IPv6 address is specified.

Parameters

ipv6-address

Specifies an IPv6 address.

Modes

DHCPv6 server configuration mode

DHCPv6 subnet configuration mode

Usage Guidelines

To use this command, you must upgrade to FI 08.0.90 using the Unified FastIron Image (UFI). Refer to the **Software Upgrade and Downgrade** chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

Up to five IPv6 DNS addresses can be configured. Configuring more than five DNS addresses throws an error and the configuration is not accepted.

The **no** form of the command removes the configured IPv6 address.

Examples

The following example specifies an IPv6 address for a DNS server.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# dns-server 2001:DB8:3000:3000::42
```

The following example specifies an IPv6 address for a DNS server for a DHCPv6 subnet.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# subnet6 3ffe:501:ffff:100::/64
device(config-dhcpv6-subnet)# dns-server 2001:DB8:3000:3000::42
```

History

Release version	Command history
08.0.90	This command was introduced.

domain-name

Configures the domain name for the DHCP client.

Syntax

domain-name *domain-name*

Command Default

No domain name is configured.

Parameters

domain-name

Specifies the name of the domain in ASCII text format.

Modes

DHCP server pool configuration mode

Usage Guidelines

The configuration of a domain name is only accepted when the domain name has a maximum of 128 characters. However, the domain label (string between 2 dots) can only have a maximum of 63 characters. If the domain label exceeds 63 characters, or if the entire domain name exceeds 128 characters, an error is thrown and the configuration is not accepted.

The **no** form of the command removes a configured domain name.

Examples

The following example specifies the domain name for the DHCP client.

```
device# configure terminal
device(config)# ip dhcp-server pool cabo
device(config-dhcp-cabo)# domain-name sierra
```

dot1x enable

Enables 802.1X authentication globally.

Syntax

dot1x enable [**all** | **ethernet** *unit* / *slot* / *port* [**to** *unit* / *slot* /*port*]]

no dot1x enable [**all** | **ethernet** *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*]]

Command Default

802.1x authentication is not enabled.

Parameters

all

Enables 802.1x authentication on all interfaces.

ethernet *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*]

Enables 802.1x authentication on the specified interface or range of interfaces.

Modes

Authentication configuration mode

Usage Guidelines

The **dot1x enable** command without any options initializes 802.1X authentication feature globally. The **dot1x enable** command with the **all** or **ethernet** options, enables 802.1X authentication on all or a specific interface respectively. After initializing 802.1X authentication feature using the **dot1x enable** command, you must enable 802.1X authentication on all or a specific interface.

Port control must be configured to activate authentication on an 802.1X-enabled interface using the **dot1x port-control** command from the interface configuration mode.

The **no** form of the command disables 802.1X authentication.

NOTE
You cannot enable 802.1X authentication on ports that have any of the following features enabled:

- Link aggregation
- Metro Ring Protocol (MRP)
- Mirror port
- LAG port
- Unidirectional Link Detection (UDLD)

Examples

The following example enables 802.1X authentication on all interfaces.

```
device(config)# authentication
device(config-authen)# dot1x enable
device(config-authen)# dot1x enable all
```

The following example enables 802.1X authentication on ethernet interface 1/1/1.

```
device(config)# authentication
device(config-authen)# dot1x enable
device(config-authen)# dot1x enable ethernet 1/1/1
```

History

Release version	Command history
08.0.20	This command was introduced.

dot1x guest-vlan

Specifies the VLAN into which the port should be placed when the client's response to the dot1x requests for authentication times out.

Syntax

dot1x guest-vlan *vlan-id*

no dot1x guest-vlan *vlan-id*

Command Default

The guest VLAN ID is not specified.

Parameters

vlan-id

Specifies the VLAN ID of the guest VLAN.

Modes

dot1x configuration mode

Usage Guidelines

The **no** form of this command disables the functionality.

Use this command when the client does not support the 802.1X authentication, so that the client can access default privileges.

If there is no response from dot1x client for EAP-packets and if guest VLAN is not configured, authentication is considered as failed and the configured failure action is performed.

Examples

The following example specifies the guest VLAN.

```
device(config)# authentication
device(config-authen)# dot1x guest-vlan 7
```

History

Release version	Command history
08.0.20	This command was introduced.

dot1x initialize

Initializes 802.1X authentication on a port.

Syntax

dot1x initialize ethernet *unit/slot/port*

Parameters

ethernet *unit/slot/port*

Specifies the details of the interface on which 802.1x authentication is to be initialized.

Modes

Privileged EXEC mode

Examples

The following example initializes dot1x authentication on a port.

```
device# dot1x initialize ethernet 3/1/1
```

dot1x macauth-override

Sets an override option so that MAC authentication is attempted when 802.1X authentication fails for the client.

Syntax

dot1x macauth-override

no dot1x macauth-override

Command Default

By default, client authentication fails if 802.1X authentication fails.

Modes

authentication configuration sub-mode

Examples

The following example configures **dot1x macauth-override** on a device.

```
device# configure terminal
device(config)# authentication
device(config-authen)# dot1x macauth-override
```

History

Release version	Command history
08.0.80	This command was introduced.

dot1x max-reauth-req

Configure the maximum number of times (attempts) EAP-request/identity frames are sent for reauthentication after the first authentication attempt.

Syntax

dot1x max-reauth-req *count*

no dot1x max-reauth-req *count*

Command Default

The device sends the EAP-request/identity frames for reauthentication twice.

Parameters

count

Specifies the number of EAP frame re-transmissions. This is a number from 1 through 10. The default is 2.

Modes

Authentication configuration mode

Usage Guidelines

The **no** form of this command will disable this functionality.

The ICX device retransmits the EAP-request/identity frame a maximum of two times. If no EAP response/identity frame is received from the client after two EAP-request/identity frame re-transmissions (or the amount of time specified with the max-reauth-req command), the device restarts the authentication process with the client.

You can optionally change the number of times the device should retransmit the EAP request/identity frame.

Examples

The following example configures the device to retransmit an EAP-request/identity frame to a client a maximum of three times.

```
device(config)# authentication
device(config-authen)# dot1x max-reauth-req 3
```

History

Release version	Command history
08.0.20	This command was introduced.

dot1x max-req

Configures the retransmission parameter that defines the maximum number of times EAP request/challenge frames are retransmitted when EAP response/identity frame is not received from the client.

Syntax

dot1x max-req *count*

no dot1x max-req *count*

Command Default

The device retransmits the EAP-request/challenge twice.

Parameters

count

Specifies the number of EAP frame re-transmissions. Th range is from from 1 through 10. The default value is 2.

Modes

Authentication configuration mode

Usage Guidelines

The **no** form of the command disables this functionality.

Examples

The following example configures the device to retransmit an EAP-request/challenge frame to a client a maximum of three times.

```
device(config)# authentication
device(config-authen)# dot1x max-req 3
```

History

Release version	Command history
08.0.20	This command was introduced.

dot1x-mka-enable

Enables MACsec Key Agreement (MKA) capabilities on a licensed device and enters dot1x-mka configuration mode.

Syntax

dot1x-mka-enable

no dot1x-mka-enable

Command Default

No MACsec capability is available.

Modes

Global configuration

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The **no** form of this command disables the MKA and MACsec functionality on all ports. This may require the already authenticated hosts to re-authenticate.

Use the **dot1x-mka-enable** command to enable MACsec on an already licensed device. Commands may be visible, but they do not work on a non-licensed device.

Examples

The following example enables MACsec capabilities on the device.

```
device# config t
device(config)# dot1x-mka-enable
device(config-dot1x-mka)#
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	MACsec support was added on ICX 7650 devices.
08.0.90	MACsec support was added on ICX 7850 devices.

Related Commands

enable-mka, mka-cfg-group

dot1x port-control

Controls port-state authorization and configures the port control type to activate authentication on an 802.1X-enabled interface.

Syntax

dot1x port-control { **auto** | **force-authorized** | **force-unauthorized** } { **all** | **ethernet** *unit* / *slot* / *port* [**to** *unit* / *slot* /*port*] }

no dot1x port-control { **auto** | **force-authorized** | **force-unauthorized** } { **all** | **ethernet** *unit* / *slot* / *port* [**to** *unit* / *slot* /*port*] }

Command Default

All controlled ports on the device are in the authorized state, allowing all traffic.

Parameters

auto

Enables authentication on a port. It places the controlled port in the unauthorized state until authentication takes place between the client and authentication server. Once the client passes authentication, the port becomes authorized. This activates authentication on an 802.1X-enabled interface. The controlled port remains in the authorized state until the Client logs off.

force-authorized

Places the controlled port unconditionally in the authorized state, allowing all traffic to pass between the client and the authenticator. This is the default state for ports on the device.

force-unauthorized

Places the controlled port unconditionally in the unauthorized state, denying any traffic to pass between the client and the authenticator.

ethernet *unit* / *slot* / *port* [**to** *unit* / *slot* / *port*]

Configures the specified interface or range of interfaces.

all

Configures all interfaces on the device.

Modes

General configuration mode

Usage Guidelines

Before activating the authentication using the **dot1x port-control auto** command on an untagged port, you must remove configured static ACL, if any, from the port.

You cannot enable 802.1X authentication on ports that have any of the following features enabled:

- Link aggregation
- Metro Ring Protocol (MRP)
- Mirror port

- LAG port

The **no** form of the command resets the port control type to the default state.

Examples

The following example places the configured port unconditionally in the unauthorized state until authentication takes place between the client and authentication server. Once the client passes authentication, the port becomes authorized.

```
device# configure terminal
device(config)# dot1x port-control auto ethernet 3/1/1
```

The following example configures the specified interface to place the controlled port unconditionally in the authorized state.

```
device# configure terminal
device(config)# dot1x port-control force-authorized ethernet 3/1/1
```

The following example configures the specified interface to place the controlled port unconditionally in the unauthorized state.

```
device# configure terminal
device(config)# dot1x port-control force-unauthorized ethernet 3/1/1
```

History

Release version	Command history
08.0.70	This command was moved to general configuration level.

dot1x timeout

Configures the timeout parameters that determine the time interval for client reauthentication and EAP retransmissions.

Syntax

dot1x timeout {**quiet-period** *seconds*| **supplicant** *seconds* | **tx-period** *seconds* }

no dot1x timeout {**quiet-period** *seconds*| **supplicant** *seconds* | **tx-period** *seconds* }

Command Default

The timeout parameters are not applied to the device.

Parameters

quiet-period *seconds*

Specifies the time, in seconds, the device waits before trying to re-authenticate the client. The quiet period can be from 1 through 4294967295 seconds. The default is 60 seconds. If the RUCKUS device is unable to authenticate the client, the ICX device waits a specified amount of time before trying again. The amount of time the device waits is specified with the quiet period parameter.

supplicant *seconds*

By default, when the ICX device relays an EAP-Request frame from the RADIUS server to the client, it expects to receive a response from the client within 30 seconds. You can optionally specify the wait interval using the **supplicant** *seconds* parameters. The value is 1 through 4294967295.

tx-period *seconds*

Specifies the EAP request retransmission interval, in seconds, with the client. By default, if the device does not receive an EAP-response/identity frame from a client, the device waits 30 seconds, then retransmits the EAP-request/identity frame. You can optionally change the amount of time the device waits before re-transmitting the EAP-request/identity frame to the client. If the client does not send back an EAP-response/identity frame within 60 seconds, the device will transmit another EAP-request/identity frame. The tx-period is a value from 1 through 4294967295. The default is 30 seconds.

Modes

Authentication configuration mode

Usage Guidelines

The **no** form of the command disables dot1x timeout.

Examples

The following example specifies the quiet period as 30 seconds.

```
device(config)# authentication
device(config-authen)# dot1x enable
device(config-authen)# dot1x timeout quiet-period 30
```

History

Release version	Command history
08.0.20	This command was introduced.

dynamic

Configures dynamic ports.

Syntax

dynamic

no dynamic

Command Default

Ports are static.

Modes

Protocol VLAN configuration mode

Usage Guidelines

Dynamic ports within any protocol VLAN age out after 10 minutes if no member protocol traffic is received on a port within the VLAN. Once you dynamically add a port to a protocol VLAN, you cannot configure routing parameters on the port. You cannot dynamically add a port to a protocol VLAN if the port has any routing configuration parameters.

NOTE
Dynamic addition and removal of ports is not applicable for an AppleTalk protocol VLAN. You cannot route to or from protocol VLANs with dynamically added ports.

The **no** form of the command removes the dynamic setting.

Examples

The following example shows the IP protocol VLAN configured with dynamic ports.

```
device(config)# vlan 10
device(config-vlan-10)# ip-proto name IP_Prot_VLAN
device(config-vlan-ip-proto)# dynamic
```

The following example shows configuring port-based VLAN 10, and then configuring an IP subnet VLAN within the port-based VLAN with dynamic ports.

```
device(config)# vlan 10 name IP_VLAN by port
device(config-vlan-10)# untagged ethernet 1/1/1 to 1/1/6
added untagged port ethernet 1/1/1 to 1/1/6 to port-vlan 10.
device(config-vlan-10)# ip-subnet 10.1.1.0/24 name Mktg-LAN
device(config-vlan-ip-subnet)# dynamic
```

The following example shows configuring port-based VLAN 20, and then configuring an IPX network VLAN within the port-based VLAN with dynamic ports. These commands create a port-based VLAN on chassis ports 1/2/1 through 1/2/6 named "Eng-LAN", configure an IPX network VLAN within the port-based VLAN, and then add ports from the port-based VLAN dynamically.

```
device(config)# vlan 20 name IPX_VLAN by port
device(config-vlan-10)# untagged ethernet 1/2/1 to 1/2/6
added untagged port ethernet 1/2/1 to 1/2/6 to port-vlan 20.
device(config-vlan-10)# ipx-network abcd ethernet_ii name Eng-LAN
device(config-vlan-ipx-network)# dynamic
```

eckeypair (PKI)

Specifies which EC keypair to use during enrollment.

Syntax

eckeypair { **key-label** *keyname* }

no eckeypair { **key-label** *keyname* }

Parameters

key-label

Precedes the keyname to be used for enrollment.

keyname

Specifies the name of the pre-existing key to be used for enrollment.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the eckeypair from enrollment configuration.

Examples

The following example creates a trustpoint named trust1 and configures it to use the ec keypair eckeyAuto.

```
device(config)# pki trustpoint trust1
device(config-pki-trustpoint-trust1)# auto-enroll
device(config-pki-trustpoint-trust1)# enrollment retry-period 2
device(config-pki-trustpoint-trust1)# enrollment profile profile1
device(config-pki-trustpoint-trust1)# pki-entity entity1
device(config-pki-trustpoint-trust1)# eckeypair key-label eckeyAuto
device(config-pki-trustpoint-trust1)# fingerprint 36:0c:92:6e:df:b2:72:eb:59:e8:63:73:2a:98:a8:91:cb:
50:94:d9
device(config-pki-trustpoint-trust1)# ocsp http post
device(config-pki-trustpoint-trust1)# exit
```

History

Release version	Command history
08.0.70	This command was introduced.

eee

Enables Energy Efficient Ethernet (EEE) globally, per port or on a range of ports.

Syntax

eee

no eee

Command Default

Energy Efficient Ethernet is not enabled.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

The **no** form of the command disables the feature on all supported ports, including those in the PX setup.

Examples

The following example enables Energy Efficient Ethernet globally.

```
device(config)# eee
EEE Feature Enabled
```

The following example enables Energy Efficient Ethernet on multiple ports.

```
device(config)# interface ethernet 1/1/1 to 1/1/12
device(config-mif-1/1/1-1/1/12)# eee
EEE Feature Enabled
EEE Feature Enabled on port 1/1/1
EEE Feature Enabled on port 1/1/2
EEE Feature Enabled on port 1/1/3
EEE Feature Enabled on port 1/1/4
EEE Feature Enabled on port 1/1/5
EEE Feature Enabled on port 1/1/6
EEE Feature Enabled on port 1/1/7
EEE Feature Enabled on port 1/1/8
EEE Feature Enabled on port 1/1/9
EEE Feature Enabled on port 1/1/10
EEE Feature Enabled on port 1/1/11
EEE Feature Enabled on port 1/1/12
```

The following example enables Energy Efficient Ethernet per port.

```
device(config)# interface ethernet e1000-1/1/1
device(config-if-e1000-1/1/1)# eee
EEE Feature Enabled EEE on port 1/1/1
```

History

Release version	Command history
08.0.30	This command was introduced.

egress-buffer-profile

Attaches a user-configured egress buffer profile to one or more ports.

Syntax

egress-buffer-profile *profile-name*

no egress-buffer-profile *profile-name*

Command Default

If a port is not attached to a user-configured egress buffer profile, it uses the default egress buffer profile.

Parameters

profile-name

Specifies the name of the egress buffer profile to be attached to the port.

Modes

Interface mode

Multiple-interface mode

Usage Guidelines

The **no** form of this command removes a user-configured egress buffer profile from the port and the port uses the default egress buffer profile.

You must configure an egress buffer profile before you can attach it to a port.

Only one egress buffer profile at a time can be attached to any port. You can attach an egress buffer profile to more than one port.

Examples

The following example attaches an egress buffer profile named egress1 to a port:

```
Device(config-if-e10000-1/1/1)# egress-buffer-profile egress1
```

The following example attaches an egress buffer profile named egress2 to multiple ports:

```
Device(config-mif-1/1/2-1/1/16)# egress-buffer-profile egress2
```

The following example removes an egress buffer profile named egress2 from multiple ports:

```
Device(config-mif-1/1/2-1/1/16)# no egress-buffer-profile egress2
```

History

Release version	Command history
08.0.10	This command was introduced.

enable (LAG)

Enables an individual port within a LAG.

Syntax

enable port-name *name*

enable ethernet *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]

Command Default

Ports within a LAG are not enabled.

Parameters

port-name *name*
Enables a named port within a LAG.

ethernet *unit/slot/port*
Enables the specified Ethernet port within the LAG.

to *unit/slot/port*
Enables a range of ports within the LAG.

lag *lag-id*
Enables the LAG virtual interface.

Modes

LAG configuration mode

Usage Guidelines

To enable a port belonging to a keep-alive LAG, you must use the **enable** command from the interface configuration mode.

Examples

The following example shows how to enable a port within a LAG configuration.

```
device(config)# lag blue static id 1
device(config-lag-blue)# ports ethernet 1/1/1 ethernet 1/1/5
device(config-lag-blue)# enable ethernet 1/3/1
```

The following example shows how to enable a port belonging to a keep-alive LAG.

```
device(config)# lag test keep-alive
device(config-lag-test)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# enable
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

enable (MAC Port Security)

Enables MAC port security.

Syntax

enable

no enable

Command Default

By default, MAC port security is disabled on all interfaces.

Modes

Port security configuration mode

Port security interface configuration mode

Usage Guidelines

The **no** form of the command disables the MAC port security.

Examples

The following example enables MAC port security on all interfaces.

```
device(config)# port security
device(config-port-security)# enable
```

The following example enables MAC port security on a specific interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port security
device(config-port-security-e1000-1/1/1)# enable
```

enable (MRP)

Enables the metro ring.

Syntax

enable

no enable

Command Default

The metro ring is disabled by default.

Modes

Metro ring configuration mode

Usage Guidelines

The **no** form of the command disables the metro ring.

Examples

The following example enables the metro ring.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-1)# enable
```

enable (Port)

Enables a port.

Syntax

enable

Command Default

A port is enabled (active).

Modes

Interface configuration mode

Usage Guidelines

A port can be deactivated (disabled) or activated (enabled) by selecting the appropriate status.

Examples

The following example enables a disabled port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# enable
```

enable (VSRP)

Enables the VSRP VRID for a port-based VLAN.

Syntax

enable

disable

Command Default

The VSRP VRID is disabled by default.

Modes

VSRP VRID configuration mode

Usage Guidelines

The device must be set as a backup. Because VSRP does not have an owner, all VSRP devices are backups. The active device for a VRID is elected based on the VRID priority.

The **disable** command deactivates VSRP.

Examples

The following example shows how to enable the VSRP VRID on a VLAN.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# backup
device(config-vlan-200-vrid-1)# enable
```

enable (Web Authentication)

Enables Web Authentication.

Syntax

enable

no enable

Command Default

Web Authentication is disabled.

Modes

Web Authentication configuration mode

Usage Guidelines

The **no** form of the command disables Web Authentication.

Examples

The following example enables Web Authentication on VLAN 10.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# enable
```

enable accounting (ACL)

Enables accounting for MAC ACLs at Layer 2, IPv4 ACLs, or IPv6 ACLs.

Syntax

enable accounting { *name* }

no enable accounting { *name* }

Command Default

By default, accounting is not enabled.

Parameters

name

Designates ACL name for which accounting is to be enabled or disabled.

Modes

access-list configuration sub-mode (IPv4, IPv6, MAC)

Usage Guidelines

The **no** form of the command disables accounting for the specified MAC ACL.

Examples

The following example creates an IPv6 access-list and enables accounting.

```
device# configure terminal
device(config)# ipv6 access-list aclv6log
device(config-ipv6-access-list aclv6log)# enable accounting
device(config-ipv6-access-list aclv6log)# exit
device(config)#
```

The following example enables accounting for the MAC ACL mac123.

```
device# configure terminal
device(config)# mac access-list mac123
device(config-macl-mac123)# enable accounting
```

The following example disables accounting for the MAC ACL mac123.

```
device# configure terminal
device(config)# mac access-list mac123
device(config-macl-mac123)# no enable accounting
```

History

Release version	Command history
08.0.95	This command was introduced.

enable egress-acl-on-cpu-traffic

Enables applying outbound access control lists (ACLs) to traffic generated by the central processing unit (CPU).

Syntax

enable egress-acl-on-cpu-traffic

no enable egress-acl-on-cpu-traffic

Command Default

CPU traffic is not subjected to outbound ACL filtering, with some exceptions.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets to the default; that is, outbound ACLs are not applied to traffic generated by the CPU.

CPU traffic on ICX 7550, and ICX 7850 stack members and standby controllers is, by default, subjected to outbound ACL filtering. In contrast, when ICX 7550and ICX 7850 devices are operating as standalone devices or as stack active controllers, they have the same default behavior as other platforms and do not apply outbound ACLs to CPU traffic.

Examples

The following example enables applying outbound ACLs to traffic generated by the CPU.

```
device# configure terminal
device(config)# enable egress-acl-on-cpu-traffic
```

enable port-config-password

Allows read-and-write access for specific ports but not for global (systemwide) parameters.

Syntax

enable port-config-password [*password*]

no enable port-config-password [*password*]

Command Default

Read-write access for specific ports is not configured.

Parameters

password

Alphanumeric password string.

Modes

Global configuration mode

Usage Guidelines

You can set one password for each of the management privilege levels: Super User level, Port Configuration level, and Read Only level.

You also can configure up to 16 user accounts consisting of a username and password, and assign each user account to one of the three privilege levels.

NOTE
You must set the Super User level password before you can set other types of passwords.

NOTE
You must use the CLI to assign a password for management privilege levels. You cannot assign a password using the Web Management Interface.

The **no** form of the command removes the configured password access.

Examples

The following example shows how to set Port Configuration level password.

```
device(config)# enable port-config-password password1
```

enable read-only-password

Allows access to the Privileged EXEC mode and User EXEC mode of the CLI, but only with read access.

Syntax

enable read-only-password [*password*]

no enable read-only-password [*password*]

Command Default

Read access for the Privileged EXEC and User EXEC modes of the CLI is not configured.

Parameters

password

Alphanumeric password string.

Modes

Global configuration mode

Usage Guidelines

You can set one password for each of the management privilege levels: Super User level, Port Configuration level, and Read Only level.

You also can configure up to 16 user accounts consisting of a username and password, and assign each user account to one of the three privilege levels.

NOTE
You must set the Super User level password before you can set other types of passwords.

NOTE
You must use the CLI to assign a password for management privilege levels. You cannot assign a password using the Web Management Interface.

The **no** form of the command removes the configured password access.

Examples

The following example shows how to set Read Only level password.

```
device(config)# enable read-only-password password1
```

enable snmp

Enables display of virtual interface statistics via SNMP.

Syntax

enable snmp { **ve-statistics** }

no enable snmp { **ve-statistics** }

Command Default

SNMP does not have access to virtual interface statistics.

Parameters

ve-statistics

Enables the display of virtual interface statistics.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables access to virtual interface statistics via SNMP.

Examples

The following example enables the display of virtual port statistics.

```
device(config)# enable snmp ve-statistics
```

History

Release version	Command history
08.0.90b	This command was modified. Syntax to enable configuration of TACACS and RADIUS was deprecated.

enable strict-password-enforcement

Enables the password security feature.

Syntax

enable strict-password-enforcement

no enable strict-password-enforcement

Command Default

Strict password is not enforced.

Modes

Global configuration mode

Usage Guidelines

When strict password enforcement is enabled on the ICX device, you must enter a minimum of 15 characters containing the following combinations when you create a user password:

- At least two uppercase characters
- At least two lowercase characters
- At least two numeric characters
- At least two special characters

NOTE
The system displays an error message when the password entered does not meet the criteria.

NOTE
Only accounts and passwords configured after the feature is enabled are subject to the minimum password length requirement.

The **no** form of the command disables strict password enforcement.

Examples

The following example shows how to enable strict password enforcement.

```
device# configure terminal
device(config)# enable strict-password-enforcement
```

History

Release version	Command history
09.0.00	This command was deprecated.
09.0.10e	This command was re-introduced into the FastIron 09.0.10 release stream. Minimum command length was set to 15.

Release version	Command history
10.0.00a	This command was re-introduced into the FastIron 10.0.00 release stream. Minimum command length was set to 15.

enable-tcp-mss

Enables the Transmission Control Protocol (TCP) maximum segment size (MSS) feature.

Syntax

enable-tcp-mss

no enable-tcp-mss

Command Default

TCP-MSS is disabled.

Modes

Global configuration mode

Usage Guidelines

The command is applicable for ICX 7650 devices only.

When TCP MSS is enabled a device can set a maximum segment size for all TCP connections.

The **no** form of the command disables the TCP MSS feature.

Examples

The following example enables TCP MSS.

```
device# configure terminal
device(config)# enable-tcp-mss
```

History

Release version	Command history
08.0.90	This command was introduced.

enable user

Configures login and password parameters specific to a user.

Syntax

enable user{**disable-on-login-failure**[*invalid-attempts*]**login-recovery-time**{**in-hours**|**in-mins**|**in-secs**}*recovery-time*]|**password-aging**|**password-history**[*previous-passwords*]}

no enable user{**disable-on-login-failure**[*invalid-attempts*]**login-recovery-time**{**in-hours**|**in-mins**|**in-secs**}*recovery-time*]|**password-aging**|**password-history**[*previous-passwords*]}

Command Default

Three login attempts are allowed.

Three minutes of recovery time is enforced before re-enabling user accounts.

In CC mode, the default recovery time is 3 seconds.

The ICX device stores the last five user passwords for each user.

Parameters

disable-on-login-failure*invalid-attempts*
Specifies the number of login attempts before a user is locked out (disabled). The range is from 1 through 10. The default is 3.

login-recovery-time{**in-hours**|**in-mins**|**in-secs**}*recovery-time*
Specifies the recovery time in designated units (hours, minutes, or seconds) after which the locked-out user accounts are re-enabled automatically. The valid range for **in-hours** is 1 through 2. The valid range for **in-minutes** is 3 through 120. The valid range for **in-seconds** is 2 through 7200.

password-aging
Enables password aging.

password-history*previous-passwords*
Specifies how many previous passwords should be stored. The range is from 1 through 15. The default is 5.

Modes

Global configuration mode

Usage Guidelines

When password aging is enabled, the software records the system time that each user password was configured or last changed. After 180 days, the CLI automatically prompts users to change their passwords when they attempt to sign on. The time displays in the output of the **show running configuration** command, indicated by set-time.

When changing a user password, the user cannot use any of the five previously configured passwords. You can configure the ICX device to store up to 15 passwords for each user, so that users do not use the same password multiple times. If a user attempts to use a password that is stored, the system prompts the user to choose a different password.

If a user fails to log in after three attempts, that user is locked out. You can increase or decrease the number of login attempts before the user is locked-out.

The **no** form of the command removes the login and password configurations.

The **no** form of **enable user disable-on-login-failure** disables both the maximum number of login attempts and recovery time configurations. To disable only the recovery time configuration, use the **no enable user** {**disable-on-login-failure**[*invalid-attempts***login-recovery-time***recovery-time*]} command.

Examples

The following example sets the number of login attempts for a user to 10.

```
device(config)# enable user disable-on-login-failure 10
```

The following example configures the user account to automatically re-enable the locked-out users after 5 minutes of the lockout.

```
device(config)# enable user disable-on-login-failure 4 login-recovery-time in-mins 5
```

The following example shows enables password aging.

```
device(config)# enable user password-aging
```

The following example configures the device to store up to 10 previous passwords.

```
device(config)# enable user password-history 10
```

History

Release version	Command history
08.0.40	The command was modified to include the **login-recovery-time***recovery-time* option.
08.0.70	The command was modified to specify *recovery-time* in hours, minutes, or seconds. The default recovery-time in CC mode was changed to 3 seconds.
09.0.00	This command was modified so that the **password-masking**keyword is not supported.

enable accounting (ACL)

Enables accounting for MAC ACLs at Layer 2, IPv4 ACLs, or IPv6 ACLs.

Syntax

enable accounting { *name* }

no enable accounting { *name* }

Command Default

By default, accounting is not enabled.

Parameters

name

Designates ACL name for which accounting is to be enabled or disabled.

Modes

access-list configuration sub-mode (IPv4, IPv6, MAC)

Usage Guidelines

The **no** form of the command disables accounting for the specified MAC ACL.

Examples

The following example creates an IPv6 access-list and enables accounting.

```
device# configure terminal
device(config)# ipv6 access-list aclv6log
device(config-ipv6-access-list aclv6log)# enable accounting
device(config-ipv6-access-list aclv6log)# exit
device(config)#
```

The following example enables accounting for the MAC ACL mac123.

```
device# configure terminal
device(config)# mac access-list mac123
device(config-macl-mac123)# enable accounting
```

The following example disables accounting for the MAC ACL mac123.

```
device# configure terminal
device(config)# mac access-list mac123
device(config-macl-mac123)# no enable accounting
```

History

Release version	Command history
08.0.95	This command was introduced.

enable-mka

Enables MACsec Key Agreement (MKA) to support MACSec licensing functionality on a specified interface, and changes the mode to dot1x-mka-interface mode to allow related parameters to be configured.

Syntax

enable-mka ethernet *unit/slot/port*

no enable-mka ethernet *unit/slot/port*

Command Default

MKA is not enabled on an interface.

Parameters

ethernet *unit/slot/port*

Specifies an Ethernet interface and the number of the device, the slot on the device, and the port on that slot.

Modes

dot1x-mka-interface mode

Usage Guidelines

When the **no** version of the command is executed, MACSec is removed from the port.

MACsec commands are supported on ICX 7550, ICX 7650, and ICX 7850 devices.

For a MACsec channel to be created between two ports, both ports and devices designated must have MACsec enabled and configured.

The **enable-mka ethernet** command enables MACSec licensing on the specified interface. If the command is not enabled, MACSec licensing functionality is not supported.

Examples

The following example enables MACsec on port 2, slot 3 of the first device in the stack.

```
device# configure terminal
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# enable-mka ethernet 1/3/2
device(config-dot1x-mka-1/3/2)#
```

The following error message is displayed when the MACSec license is not purchased for the device.

```
device# configure terminal
device(config)# dot1x-mka-enable
device (config-dot1x-mka)# enable-mka ethernet 2/2/1
Error: No MACsec License available for the port 2/2/1. Cannot enable MACsec !!!
Error: MKA cannot be enabled on port 2/2/1
device(config-dot1x-mka)#
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

encapsulation-mode

Specifies the encapsulation mode for an IPsec proposal.

Syntax

encapsulation-mode *encapsulation-mode*

Command Default

The default encapsulation mode is tunnel mode.

Parameters

encapsulation-mode

Specifies the encapsulation mode. Only tunnel mode is currently supported.

Modes

IPsec proposal configuration mode

Usage Guidelines

Because tunnel mode is configured by default and is the only mode that is currently supported, you do not need to configure the encapsulation mode for an IPsec proposal.

Examples

The following example shows how to configure tunnel mode as the encapsulation mode for an IPsec proposal named ipsec_proposal.

```
device(config)# ipsec proposal ipsec_proposal
device(config-ipsec-proposal-ipsec_proposal)# encapsulation-mode tunnel
```

History

Release version	Command history
08.0.50	This command was introduced.

encryption

Configures an encryption algorithm for an Internet Key Exchange version 2 (IKEv2) proposal.

Syntax

encryption { **aes-cbc-128** | **aes-cbc-256** }

no encryption { **aes-cbc-128** | **aes-cbc-256** }

Command Default

The default encryption algorithm is AES-CBC-256.

Parameters

aes-cbc-128

Specifies the 128-bit advanced encryption standard algorithm in cipher block chaining mode.

aes-cbc-256

Specifies the 256-bit advanced encryption standard algorithm in cipher block chaining mode.

Modes

IKEv2 proposal configuration mode

Usage Guidelines

Multiple encryption algorithms may be configured for an IKEv2 proposal.

When only one encryption algorithm is configured for an IKEv2 proposal, removing it restores the default configuration.

The **no** form of the command removes the specified encryption algorithm configuration.

Examples

The following example shows how to configure the AES-CBC-128 encryption algorithm for an IKEv2 proposal named ikev2_proposal.

```
device(config)# ikev2 proposal ikev2_proposal
device(config-ikev2-proposal-ikev2_proposal)# encryption aes-cbc-128
```

History

Release version	Command history
08.0.50	This command was introduced.

encryption-algorithm

Configures an encryption algorithm to protect data traffic for an IPsec proposal.

Syntax

encryption-algorithm{**aes-gcm-256**|**aes-gcm-128**}

no encryption-algorithm{**aes-gcm-256**|**aes-gcm-128**}

Command Default

The default encryption algorithm for an IPsec proposal is AES-GCM-256.

Parameters

aes-gcm-256
Specifies that the 256-bit advanced encryption standard algorithm in Galois counter mode is supported for Encapsulating Security Payload (ESP) encryption.

aes-gcm-128
Specifies that the 128-bit advanced encryption standard algorithm in Galois counter mode is supported for ESP encryption.

Modes

IPsec proposal configuration mode

Usage Guidelines

Multiple encryption algorithms may be configured for an IPsec proposal.

For an IPsec tunnel to come up successfully, IPsec peer devices must be configured with a common encryption algorithm.

When dual mode is configured on both the local and remote peers, AES-GCM-256 is automatically selected for encryption and decryption.

When dual mode is not configured on both the local and remote peers, the algorithm that is configured on both peers is automatically selected for encryption and decryption.

When only one encryption algorithm is configured for an IPsec proposal, removing it restores the default configuration.

The **no** form of the command removes the specified encryption algorithm configuration.

Examples

The following example shows how to configure the AES-GCM-128 encryption algorithm for an IPsec proposal named ipsec_prop.

```
device(config)# ipsec proposal ipsec_prop
device(config-ipsec-proposal-ipsec_prop)# encryption-algorithm aes-gcm-128
```

History

Release version	Command history
08.0.50	This command was introduced.

enforce-first-as

Enforces the use of the first autonomous system (AS) path for external BGP (eBGP) routes.

Syntax

enforce-first-as

no enforce-first-as

Modes

BGP configuration mode

Usage Guidelines

This command causes the router to discard updates received from eBGP peers that do not list their AS number as the first AS path segment in the AS_PATH attribute of the incoming route.

The **no** form of the command disables this feature.

Examples

The following example configures the device to enforce the use of the first AS path.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# enforce-first-as
```

enrollment (PKI)

Sets the enrollment retry count, retry period, or profile.

Syntax

enrollment { **retry-count** *count* | **retry-period** *period* | **profile** *profile-name* }

no enrollment { **retry-count** *count* | **retry-period** *period* | **profile** *profile-name* }

Parameters

retry-count *count*

Sets the number of enrollment attempts allowed before the next retry-period expires.

retry-period *period*

Defines in minutes the wait required before another attempt to enroll after the maximum retry count has been reached. The valid range is 1 through 60 minutes.

profile *profile-name*

Designates the profile to be used for enrollment.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The **no** form of the command removes the configuration.

Examples

The following example sets the allowable enrollment retries to 3, sets a period of 2 minutes for the retry period, and configures the enrollment profile as profile1.

```
device# configure terminal
device(config)# pki trustpoint trust1
device(config-pki-trustpoint-trust1)# enrollment retry-count 3
device(config-pki-trustpoint-trust1)# enrollment retry-period 2
device(config-pki-trustpoint-trust1)# enrollment profile profile1
```

History

Release version	Command history
08.0.70	This command was introduced.

erase flash

Erases an image stored in the system flash.

Syntax

erase flash { **primpary** | **secondary** | **unit-id-pri** *string* | **unit-id-sec** *string* }

Parameters

primary
Erases the primary code image.

secondary
Erases the secondary code image.

unit-id-pri *string*
Erases the primary code image from the specified stack members. You can specify **all** or a member listwithout blank spaces (2,3,5-7).

unit-id-sec *string*
Erases the secondary code image from the specified stack members. You can specify **all** or a member list without blank spaces (2,3,5-7).

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to erase the files stored in the primary or secondary flash or on the stack units.

Examples

The following example erases the image stored in the secondary flash of the system.

```
device# erase flash secondary
```

The following example erases the image stored in the secondary flash of a set of stack units.

```
device# erase flash unit-id-sec 3,4,5-8,9
```

erase pre-8090-startup-backup

For all stack units, removes the backup startup-config file for releases prior to 08.0.90 (created on upgrade to 08.0.90).

Syntax

erase pre-8090-startup-backup

Modes

Privileged EXEC mode

Usage Guidelines

When you enter the **write memory** command for FastIron release 08.0.90 or a later release and the startup-config flash was generated by a pre-08.0.90 release, the original config file is renamed as the backup file.

If there is no possibility that you will revert to a pre-08.0.90 release or if there are many configuration changes in the 08.0.90 (or subsequent) release, you can remove the backup file.

Examples

The following example erases the startup-config file from an earlier release that was automatically saved when the unit was upgraded to FastIron 08.0.90.

```
device# erase pre-8090-startup-backup
T=1d23h37m22.5: Erase request sent to unit 2-3
Erase pre8090-startup-config Done.
```

History

Release version	Command history
08.0.90	This command was introduced.

erase startup-config

Erases the startup configuration.

Syntax

erase startup-config [**unit-id** *unit-list*]

Parameters

unit-id *unit-list*

Erases the startup configuration file from the specified stack member. The member list is specified without blank spaces (2,3,5-7).

Modes

Privileged EXEC mode

Examples

The following example erases the startup configuration from specified members in a stack.

```
device# erase startup-config unit-id 2,5,7-8,10
```

erase system factory-default

Wipes out the system settings and restores factory default settings.

Syntax

erase system factory-default

Modes

Global configuration mode

Usage Guidelines

Autocomplete is disabled for this command. You must manually key in **erase system factory-default**. To prevent accidental execution of this command there are two levels of acceptance required from the user. First, a warning message is displayed asking the user for confirmation. Upon confirmation, a detailed warning message is displayed, prompting the user about various files which may be erased upon executing the command. The factory reset action is triggered when you accept the warning. The switch will then detect the factory reset action and start performing the following actions:

- If an external USB is plugged in, the software unmounts it.
- System is set to the same state as shipping out of the factory, i.e.
  - Erase FI config
  - Erase boot config
  - Erase core files
  - Erase sys logs
  - Erase license Info
  - Erase license persistent
  - Erase license files (for XML license file)
- The system will auto reboot
- The switch boots up with factory default settings. The SAU license is restored to the original license info present in the original SKU info.

  NOTE
  On ICX 8200 and ICX 7650 platforms, restoring the factory default settings can also be initiated by pressing the reset button on the front panel. Refer to the platform Hardware Installation Guide for detailed instructions on the use of the reset button.

Examples

The following example wipes out the system settings and restores factory default settings.

```
device# erase system factory-default

“System will go for a reload. Please enter “y” to confirm “n” to exit”
Y
************************************************************
* Factory Reset Alert *
************************************************************
* Please pay attention to the details listed below *
* 1. uboot params will be erased, you might want to *
* backup the uboot params. *
* stop at uboot and do 'printenv' to read uboot params *
* 2. All configuration will be erased, you might want to *
* backup the running config (show running-config) *
* 3. Core Files, Logs will be erased *
* 4. SAU license is restored to original sku *
* use show license sau for more detials *
* 5. XML license is erased
* 6. System will go for a reload *
************************************************************
************************************************************
I have read the alert and factory reset can be performed now
Please enter 'y' to confirm, 'n' to exit :
************************************************************
```

History

Release version	Command history
08.0.80	This command was introduced.

errdisable packet-inerror-detect

Enables the device to monitor configured ports for inError packets and defines the sampling time interval in which the number of inError packets is counted.

Syntax

errdisable packet-inerror-detect *sampling-interval*

no errdisable packet-inerror-detect *sampling-interval*

Command Default

There is no monitoring for inError packets on any port of the device.

Parameters

sampling-interval

Specifies the sampling interval in seconds. It can take a value in the inclusive range of 2 through 60 seconds.

Modes

Global configuration mode

Usage Guidelines

If the number of inError packets exceeds the configured threshold for two consecutive sampling windows, then the configured port is error-disabled. The **no** form of this command disables this monitoring.

Examples

The following example sets the sampling interval in which the number of inError packets is counted to three seconds.

```
device(config)# errdisable packet-inerror-detect 3
```

History

Release version	Command history
07.3.00g	This command was introduced.

errdisable recovery

Enables a port to recover automatically from the error-disabled state.

Syntax

errdisable recovery cause { **all** | *cause* }

no errdisable recovery cause { **all** | *cause* }

errdisable recovery interval *time*

no errdisable recovery interval *time*

Command Default

The ports in the error-disabled state are not recovered.

Parameters

all

Enables the ports torecover automatically from an error-disabled state caused by reasons such as BPDU guard violation, the number of inError packets exceeding the configured threshold, a loop detection violation, or the reception of a critical event from the remote device in the case of an EFM-OAM interface.

cause*cause*

Configures the ports to recover from an error-disabled state caused by one of the following reasons:

- **bpduguard**
- **lag-operspeed-mismatch**
- **loam-critical-event**
- **loop-detection**
- **packet-inerror-detect**
- **pvstplus-protect**

bpduguard

Configures the port to recover from the error-disabled state if the state was caused because of BPDU guard violation.

lag-operspeed-mismatch

Configures the port to recover from the error-disabled state if the state was caused because of lag operational speed mismatch.

loam-critical-event

Configures the EFM-OAM interface to recover from the error-disabled state if the state was caused due to reception of a critical event from the remote device.

loop-detection

Configures the port to recover from the error-disabled state if the state was caused because of loop detection.

packet-inerror-detect

Configures the port to recover from the error-disabled state if the state was caused because the number of inError packets exceeded the configured threshold.

pvstplus-protect

Configures the port to recover from the error-disabled state if the state was caused because the PVST+ Protect feature is enabled.

interval

Configures a timeout value for the recovery mechanism when the port is in an error-disabled state. Upon the expiry of the timeout value, the ports are automatically recovered.

time

Specifies the recovery time interval in seconds for the device to wait before automatically recovering the ports. Range is from 10 through 65535 seconds. The default recovery timeout value is 300 seconds.

Modes

Global configuration mode

Usage Guidelines

When automatic recovery re-enables the port, the port is not in the error-disabled state, but it can remain down for other reasons, such as the Tx/Rx of the fibre optic not being seated properly. Thus, the port is not able to receive the signal from the other side. In this case, after the optic is inserted correctly, you must manually disable the port and then re-enable it.

The **no** form of the **errdisable recovery cause** command disables the error-disabled recover functionality.

The **no** form of the **errdisable recovery interval** command reverts to the default recovery time interval value.

Examples

The following example configures the device to recover the port from the error-disabled state caused because of BPDU guard violation.

```
device(config)# errdisable recovery cause bpduguard
```

The following example configures the device to recover the EFM-OAM interface from the error-disabled state caused by reception of a critical event from the remote device.

```
device(config)# errdisable recovery cause loam-critical-event
```

The following example configures the device to recover the port from the error-disabled state caused because of loop detection.

```
device(config)# errdisable recovery cause loop-detection
```

The following example configures the device to recover the port from the error-disabled state caused because the number of inError packets exceeded the configured threshold.

```
device(config)# errdisable recovery cause packet-inerror-detect
```

The following example configures the device to recover the port from the error-disabled state caused because PVST+ Protect was enabled.

```
device(config)# errdisable recovery cause pvstplus-protect
```

The following example configures the device to recover the port from the error-disabled state caused because lag operation speed mismatch enabled.

```
device(config)# errdisable recovery cause lag-operspeed-mismatch
```

The following example configures the error-disabled recovery timeout interval to 120 seconds.

```
device(config)# errdisable recovery interval 120
```

History

Release version	Command history
08.0.30	The **loam-critical-event** option was introduced.
08.0.30mb	The **pvstplus-protect** option was introduced.
08.0.90	The **lag-operspeed-mismatch** option was introduced.

ethernet (EFM-OAM)

Enables or disables EFM-OAM on an interface or multiple interfaces.

Syntax

ethernet *unit/slot/port* [[**to** *unit/slot/port*] [**ethernet** *unit/slot/port* [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]] { **active** | **passive** | **allow-loopback** | **remote-failure critical-event action block-interface** }

no ethernet *unit/slot/port* [[**to** *unit/slot/port*] [**ethernet** *unit/slot/port* [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]] { **active** | **passive** | **allow-loopback** | **remote-failure critical-event action block-interface** }

Command Default

The EFM-OAM is disabled locally on an interface.

Parameters

ethernet *unit/slot/port*
Specifies the interface.

to
Configures the range of interfaces to enable EFM-OAM.

lag *lag-id*
Specifies the LAG virtual interface.

active
Sets the EFM-OAM operational mode as active on the interface.

passive
Sets the EFM-OAM operational mode as passive on the interface.

allow-loopback
Enables the interface to respond to a loopback request from the remote device.

remote-failure critical-event action block-interface
Configures the device to block the remote interface upon reception of a critical event information from the remote interface.

Modes

EFM-OAM protocol configuration mode

Usage Guidelines

When the active mode is specified, the device can send OAMPDU packets over the port to initiate an EFM-OAM discovery process. For the discovery process to be initiated, the EFM-OAM protocol must be enabled.

When the passive mode is specified, the device cannot use the port to send OAMPDU packets, but can respond if it receives OAMPDUs from the remote device.

When both peers are in passive mode (abnormal configuration), EFM-OAM protocol will not converge.

The OAMPDUs and pause frames will not be looped back in the loopback mode. All other Layer 2 protocol packets will be looped back if received on a loopbacked interface.

The **no** form of the command disables the EFM-OAM locally on the specified interface.

Examples

The following example enables EFM-OAM on an interface and sets it to active mode.

```
device(config)# link-oam
device(config-link-oam)# ethernet 1/1/3 active
```

The following example enables EFM-OAM on a range of interfaces and sets them to active mode.

```
device(config)# link-oam
device(config-link-oam)# ethernet 1/1/4 to 1/1/8 active
```

The following example enables EFM-OAM on an interface and sets it to passive mode.

```
device(config)# link-oam
device(config-link-oam)# ethernet 2/1/1 passive
```

The following example enables EFM-OAM on a range of interfaces and sets them to passive mode.

```
device(config)# link-oam
device(config-link-oam)# ethernet 2/1/1 to 2/1/6 passive
```

The following example configures the interface to respond to the loopback request from the remote device.

```
device(config)# link-oam
device(config-link-oam)# ethernet 1/1/3 allow-loopback
```

The following example sets the device to block the interface when a critical event failure condition is detected.

```
device(config)# link-oam
device(config-link-oam)# ethernet 2/1/1 remote-failure critical-event action block-interface
```

History

Release version	Command history
08.0.30	This command was introduced.
08.0.61	This command was modified to add **lag** *lag-id* options.

ethernet loopback

Enables the Ethernet loopback functionality on a port in the VLAN-unaware mode.

Syntax

ethernet loopback

no ethernet loopback

Command Default

Ethernet loopback is not enabled on a port.

Modes

Interface configuration mode

Usage Guidelines

The Ethernet loopback functionality on a port in the VLAN-unaware mode can be configured either as flow-aware or flow-unaware. The specified port does not need to be explicitly assigned as a member of any VLAN.

To enable Ethernet loopback on a port in the VLAN-unaware mode as flow-aware, the **ethernet loopback test-mac** command must be executed before enabling the Ethernet loopback.

To add or delete a port from VLAN, the VLAN unaware ethernet loopback configuration on the port must be removed.

Before adding or deleting a port form VLAN, the VLAN unaware ethernet configuration must be removed, if configured.

The **ethernet loopback** command is not supported on multiple ports (MIF) mode.

The **no** form of the command disables the Ethernet loopback functionality on the specified port.

Examples

The following example configures Ethernet loopback on a specific port in the VLAN-unaware mode as flow-unaware.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ethernet loopback
```

The following example configures Ethernet loopback in VLAN-unaware mode as flow-aware.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ethernet loopback test-mac 1111.2222.3333 4444.5555.5555
device(config-if-e1000-1/1/1)# ethernet loopback
```

The following example shows the error which occurs when you try to add a port to VLAN, without removing the VLAN unaware ethernet loopback configuration.

```
bkes_oct14-16_DND(config-if-e1000-3/1/4)#vlan 10
bkes_oct14-16_DND(config-vlan-10)#tag eth 3/1/4
Error: Port 3/1/4 has Ethernet loopback configuration
Note: Remove Ethernet loopback from port 3/1/4 and then add port as member of VLAN 10
bkes_oct14-16_DND(config-vlan-10)#int eth 3/1/4
```

History

Release version	Command history
08.0.30	This command was introduced.

ethernet loopback (VLAN-aware)

Configures the Ethernet loopback functionality on one or a set of ports in a specific VLAN (VLAN-aware mode).

Syntax

ethernet loopbackethernet*unit/slot/port*[[**to***unit/slot/port*][**ethernet***unit/slot/port*]...]

no ethernet loopbackethernet*unit/slot/port*[[**to***unit/slot/port*][**ethernet***unit/slot/port*]...]

ethernet loopbacklag*lag-id*[**to***lag-id*|**ethernet***unit/slot/port*[[**to***unit/slot/port*][**ethernet***unit/slot/port*]...]]

no ethernet loopbacklag*lag-id*[**to***lag-id*|**ethernet***unit/slot/port*[[**to***unit/slot/port*][**ethernet***unit/slot/port*]...]]

Command Default

Ethernet loopback is not enabled on any port in a VLAN.

Parameters

ethernet
: Specifies the Ethernet interface.

to
: Configures the range of ports.

unit/slot/port
: Specifies the interface details.

lag*lag-id*
: Specifies the LAG virtual interface.

Modes

VLAN configuration mode

Usage Guidelines

The Ethernet loopback functionality on a port in the VLAN-aware mode can be configured either as flow-aware or flow-unaware. The ports on which Ethernet loopback is being enabled must be explicitly assigned as a member of the VLAN.

To enable Ethernet loopback on a port in the VLAN-aware mode as flow-aware, the **ethernet loopback test-mac** command must be executed for the specific port from the interface mode before enabling Ethernet loopback.

A port cannot be configured as VLAN-aware and VLAN-unaware simultaneously, and the flow configuration must be either flow-aware or flow-unaware.

The **ethernet loopback** command in VLAN-aware mode is not supported on VLAN Group, VLAN Range, or mult-range VLAN (MVLAN) mode.

The **ethernet loopback** command VLAN-aware mode cannot be configured on a set of VLANs that share a Layer 2 topology (Topology Group).

The **no** form of the command disables Ethernet loopback from the ports of the specified VLAN.

Examples

The following example configures Ethernet loopback in VLAN-aware mode as flow-aware.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ethernet loopback test-mac 1111.2222.3333 4444.5555.5555
device(config-if-e1000-1/1/1)# exit
device(config)# vlan 100
device(config-vlan-100)# ethernet loopback ethernet 1/1/1 to 1/1/10
```

The following example configures Ethernet loopback on a port in VLAN-aware mode as flow-unaware.

```
device(config)# vlan 100
device(config-vlan-100)# ethernet loopback ethernet 1/1/1
```

The following example configures Ethernet loopback on a range of ports in VLAN-aware mode as flow-unaware.

```
device(config)# vlan 100
device(config-vlan-100)# ethernet loopback ethernet 1/1/1 to 1/1/10
```

The following example configures Ethernet loopback on two separate ports in VLAN-aware mode as flow-unaware.

```
device(config)# vlan 100
device(config-vlan-100)# ethernet loopback ethernet 1/1/1 ethernet 1/2/3
```

History

Release version	Command history
08.0.30	This command was introduced.
08.0.61	This command was modified to add **lag***lag-id* options.

ethernet loopback test-mac

Configures the port as flow-aware by specifying the source and destination MAC addresses of the flow on the interface.

Syntax

ethernet loopback test-mac*destination-MACsource-MAC*

no ethernet loopback test-mac*destination-MACsource-MAC*

Command Default

The port is flow-unaware.

Parameters

destination-MAC

Specifies the flow parameter destination MAC address of the traffic.

source-MAC

Specifies the flow parameter source MAC address of the traffic.

Modes

Interface configuration mode

Usage Guidelines

In other supported platforms, configure the **ethernet loopback test-mac** command only if you require the port to be flow-aware.

The source MAC address and destination MAC address must be unicast MAC addresses and the source MAC address must be unique across the network for proper Ethernet loopback operation.

You cannot configure a port as flow-aware and flow-unaware simultaneously. The flow can be configured on an in-service Ethernet loopback port. However, the flow configuration cannot be modified or removed if there is an ongoing loopback service on the interface.

The **ethernet loopback test-mac** command is not supported in multi-range VLAN (MVLAN) mode.

The **no** form of the command removes the flow configuration for the specified port.

Examples

The following example configures the flow on a specific port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ethernet loopback test-mac 1111.2222.3333/4444.5555.5555
```

History

Release version	Command history
08.0.30	This command was introduced.

exclude ethernet

Excludes a port from the protocol VLAN membership.

Syntax

exclude ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

no exclude ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

Command Default

The port is not excluded from the protocol VLAN membership.

Parameters

stackid/slot/port
Specifies the Ethernet port which should be excluded from the static protocol VLAN membership.

to *stackid/slot/port*
Specifies the range of ports that should be exluded from the static protocol VLAN membership.

Modes

IP protocol VLAN configuration mode

IPX protocol VLAN configuration mode

IPv6 protocol VLAN configuration mode

AppleTalk protocol VLAN configuration mode

DECnet protocol VLAN configuration mode

NetBIOS protocol VLAN configuration mode

Other protocol VLAN configuration mode

Usage Guidelines

The **no** form of the command includes in the protocol VLAN membership.

Examples

The following example shows how to exclude ports from the protocol VLAN memebership.

```
device(config)# vlan 10
device(config-vlan-10)# atalk-proto name Red
device(config-atalk-proto)# no dynamic
device(config-atalk-proto)# exclude ethernet 1/1/1 to 1/1/3
```

excluded-address

Specifies the addresses that should be excluded from the address pool.

Syntax

excluded-address { *address* | *address-low address-high* }

Parameters

address
: Specifies a single address.

address-low address-high
: Specifies a range of addresses.

Modes

DHCP server pool configuration mode

Usage Guidelines

Use this command to specify either a single address or a range of addresses that are to be excluded from the address pool.

Examples

The following example specifies the excluded address.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# excluded-address 10.2.3.44
```

external-lsdb-limit (OSPFv2)

Configures the maximum size of the external link state database (LSDB).

Syntax

external-lsdb-limit *value*

no external-lsdb-limit

Parameters

value

Maximum size of the external LSDB. Valid values range from 1 through 14913080. The default is 14913080.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

If you change the value, make sure to save the running-config file and reload the software. The change does not take effect until you reload or reboot the software.

The **no** form of the command restores the default setting.

Examples

The following example sets the limit of the LSDB to 20000.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# external-lsdb-limit 20000
```

external-lsdb-limit (OSPFv3)

Configures the maximum size of the external link state database (LSDB).

Syntax

external-lsdb-limit *value*

no external-lsdb-limit

Parameters

value

Maximum size of the external LSDB. Valid values range from 1 through 250000. The default is 250000.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

If you change the value, you must save the running-config file and reload the software. The change does not take effect until you reload or reboot the software.

The **no** form of command reverts to the default setting.

Examples

The following example sets the limit of the external LSDB to 15000.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# external-lsdb-limit 15000
```

fast-external-fallover

Resets the session if a link to an eBGP peer goes down.

Syntax

fast-external-fallover

no fast-external-fallover

Modes

BGP configuration mode

Usage Guidelines

Use this command to terminate and reset external BGP sessions of a directly adjacent peer if the link to the peer goes down, without waiting for the timer, set by the BGP **timers** command, to expire. This can improve BGP conversion time, but can also lead to instability in the BGP routing table as a result of a flapping interface.

Examples

The following example configures the device to reset the session if a link to an eBGP peer goes down.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# fast-external-fallover
```

fast port-span

Enables Fast Port Span, configuring the ports attached to the end stations to enter into the forwarding state in four seconds.

Syntax

fast port-span [**exclude** { **ethernet** *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...]]

no fast port-span [**exclude ethernet** *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...]]

Command Default

Fast Port Span is enabled by default on all ports that are attached to end stations.

Parameters

exclude

Excludes a port from Fast Port Span while leaving Fast Port Span enabled globally.

ethernet *stackid/slot/port*

Specifies the Ethernet port that you want to exclude from Fast Port Span.

to *stackid/slot/port*

Specifies a range of Ethernet ports that you want to exclude from Fast Port Span.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

Disabling and then re-enabling Fast Port Span clears the exclude settings and thus enables Fast Port Span on all eligible ports. To make sure Fast Port Span remains enabled on the ports following a system reset, save the configuration changes to the startup-config file after you re-enable Fast Port Span. Otherwise, when the system resets, those ports will again be excluded from Fast Port Span.

Fast Port Span allows faster convergence on ports that are attached to end stations and thus do not present the potential to cause Layer 2 forwarding loops. Because the end stations cannot cause forwarding loops, they can safely go through the STP state changes (blocking to listening to learning to forwarding) more quickly than is allowed by the standard STP convergence time. Fast Port Span performs the convergence on these ports in four seconds (two seconds for listening and two seconds for learning).

Fast Port Span is a system-wide parameter and is enabled by default. Thus, when you boot a device, all the ports that are attached only to end stations run Fast Port Span. For ports that are not eligible for Fast Port Span, such as ports connected to other networking devices, the device automatically uses the normal STP settings.

The **no** form of the command disables Fast Port Span. Using the **exclude** option with the **no** form of the command enables Fast Port Span on the specified ports.

Examples

The following example enables Fast Port Span on all ports.

```
device(config)# fast port-span
```

The following example excludes a set of ports from Fast Port Span.

```
device(config)# fast port-span exclude ethernet 1/1/1 ethernet 1/2/1 ethernet 1/3/1
```

The following example shows how to re-enable Fast Port Span on port 1/1/1 only while not re-enabling other excluded ports.

```
device(config)# no fast port-span exclude 1/1/1
```

The following example shows how to re-enable Fast Port Span on all excluded ports.

```
device(config)# no fast port-span
device(config)# fast port-span
device(config)# write memory
```

fast uplink-span

Enables Fast Uplink Span, configuring a device deployed as a wiring closet switch to decrease the convergence time for the uplink ports to another device to just one second.

Syntax

fast uplink-span ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

no fast uplink-span ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

Command Default

Fast Uplink Span is not enabled.

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet port on which you want to enable Fast Uplink Span.

to *stackid/slot/port*

Specifies a range of ports on which you want to enable Fast Uplink Span.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

The new uplink port goes directly to forward mode (bypassing listening and learning modes). The wiring closet switch must be a Ruckus device, but the device at the other end of the link can be a Ruckus device or another vendor's switch.

To configure Fast Uplink Span, specify a group of ports that have redundant uplinks on the wiring closet switch (Ruckus device). If the active link becomes unavailable, Fast Uplink Span transitions the forwarding to one of the other redundant uplink ports in just one second. All Fast Uplink Span-enabled ports are members of a single Fast Uplink Span group.

To avoid the potential for temporary bridging loops, it is recommended that you use Fast Uplink Span only for wiring closet switches (switches at the edge of the network cloud). In addition, enable Fast Uplink Span only on a group of ports intended for redundancy, so that at any given time only one of the ports is expected to be in the forwarding state.

The **no** form of the command removes Fast Uplink Span on the ports.

Examples

The following example configures a group of ports for Fast Uplink Span.

```
device(config)# fast uplink-span ethernet 1/4/1 to 1/4/4
```

The following example configures Fast Uplink Span for a VLAN.

```
device(config)# vlan 10
device(config-vlan-10)# untag ethernet 1/8/1 to 1/8/2
device(config-vlan-10)# fast uplink-span ethernet 1/8/1 to 1/8/2
```

fdp advertise

Configures the IP management address to advertise for Foundry Discovery Protocol (FDP) neighbors.

Syntax

fdp advertise { **ipv4** | **ipv6** }

no fdp advertise { **ipv4** | **ipv6** }

Command Default

When FDP is enabled, by default, the device advertises one IPv4 address and one IPv6 address to its FDP neighbors.

Parameters

ipv4

Advertises only the IPv4 management address.

ipv6

Advertises only the IPv6 management address.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command sets the device to advertis one IPv4 address and one IPv6 address to its FDP neighbors.

When FDP is enabled, by default, the device advertises one IPv4 address and one IPv6 address to its FDP neighbors. If desired, you can configure the device to advertise only the IPv4 management address or only the IPv6 management address. You can set the configuration globally on a Layer 2 switch or at the interface level on a Layer 3 switch.

Examples

The following example configures the device to advertise only the IPv6 management address.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# fdp advertise ipv6
```

fdp enable

Enables Foundry Discovery Protocol (FDP) on an interface.

Syntax

fdp enable

no fdp enable

Command Default

FDP is enabled at the interface level once FDP is enabled on the device.

Modes

Interface configuration mode

Usage Guidelines

When FDP is enabled globally, you can disable and re-enable FDP on individual ports.

The **no** form of the command disables FDP on an interface.

Examples

The following example enables FDP on an interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# fdp enable
```

fdp holdtime

Configures the Foundry Discovery Protocol (FDP) update hold time.

Syntax

fdp holdtime *secs*

no fdp holdtime

Command Default

By default, a device that receives an FDP update holds the information until the device receives a new update or until 180 seconds have passed since receipt of the last update.

Parameters

secs

Specifies the number of seconds for which a device that receives an FDP update can hold the update before discarding it. Valid values are from 10 through 255. The default value is 180.

Modes

Global configuration mode

Usage Guidelines

Once the device receives a new update or once 180 seconds have passed since receipt of the last update, the device discards the update.

The **no** form of the command sets the hold time to its default value of 180 seconds.

Examples

The following example sets the FDP hold time to 200 seconds.

```
device(config)# fdp holdtime 200
```

fdp run

Enables a device to send Foundry Discovery Protocol (FDP) packets globally.

Syntax

fdp run

no fdp run

Command Default

FDP is disabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the sending of FDP packets.

Examples

The following example enables FDP globally.

```
device(config)# fdp run
```

fdp timer

Configures the Foundry Discovery Protocol (FDP) update timer.

Syntax

fdp timer *secs*

no fdp timer

Command Default

By default, a device enabled for FDP sends an FDP update every 60 seconds.

Parameters

secs

Specifies the number of seconds between FDP updates. The value can range from 5 through 900 seconds. The default value is 60 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command sets the FDP timer to its default value of 60 seconds.

Examples

The following example sets the FDP timer to 360 seconds.

```
device(config)# fdp timer 360
```

filter-strict-security enable

Enables or disables strict filter security for MAC authentication and 802.1X authentication.

Syntax

filter-strict-security

no filter-strict-security

Command Default

Strict filter security is enabled.

Modes

Authentication mode

Usage Guidelines

When strict security mode is enabled, authentication for a port fails if the Filter-Id attribute contains invalid information, or if insufficient system resources are available to implement the IP ACLs.

When strict security mode is enabled:

- If the Filter-Id attribute in the Access-Accept message contains a value that does not refer to an existing filter (that is, IP ACL configured on the device), then the client will not be authorized, regardless of any other information in the message (for example, if the Tunnel-Private-Group-ID attribute specifies a VLAN on which to assign the port).
- If the device does not have the system resources available to dynamically apply a filter to a port, then the client will not be authenticated.

When strict filter security is disabled:

- If the Filter-Id attribute in the Access-Accept message contains a value that does not refer to an existing filter (that is, a MAC address filter or IP ACL configured on the device), then the client remains authorized and no filter is dynamically applied to it.
- By default, strict security mode is enabled for all MAC authentication and 802.1X-enabled interfaces, but you can manually disable or enable it using the **filter-strict-security** command from the authentication configuration mode or using the **authentication filter-strict-security** command from the interface configuration mode.

The **no** form of the command disables strict filter security.

Examples

The following example enables strict filter security.

```
device(config)# authentication
device(config-authen)# filter-strict-security enable
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.30mb	This command was modified.

fingerprint (PKI)

Sets the authentication fingerprint for the Certificate Authority (CA).

Syntax

fingerprint { *fingerprint_value* }

no fingerprint

Parameters

fingerprint_value

ASCII string in the format xx:xx:xx:x... that defines the CA fingerprint.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the configuration.

Examples

The following configuration for the trustpoint trust1 configures the authentication fingerprint for the CA as the value shown.

```
device# configure terminal
device(config)# pki trustpoint trust1
device(config-pki-trustpoint-trust1)# auto-enroll
device(config-pki-trustpoint-trust1)# enrollment retry-period 2
device(config-pki-trustpoint-trust1)# enrollment profile profile1
device(config-pki-trustpoint-trust1)# pki-entity entity1
device(config-pki-trustpoint-trust1)# eckeypair key-label eckeyAuto
device(config-pki-trustpoint-trust1)# fingerprint 36:0c:92:6e:df:b2:72:eb:59:e8:63:73:2a:98:a8:91:cb:
50:94:d9
device(config-pki-trustpoint-trust1)# ocsp http post
device(config-pki-trustpoint-trust1)# exit
```

History

Release version	Command history
08.0.70	This command was introduced.

flash-timeout

Configures the flash timeout duration.

Syntax

flash-timeout *time*

no flash-timeout *time*

Command Default

The default flash timeout value is 12 minutes.

Parameters

time

Specifies the flash timeout value in minutes. Valid values range from 12 to 120 minutes.

Modes

Global configuration mode

Usage Guidelines

The new timeout value will be effective from the next flash operation.

The **no** form of the command removes the flash timeout configuration and restores the default value of 12 minutes.

Examples

The following example configures the flash timeout value as 30 minutes.

```
device(config)# flash-timeout 30
```

History

Release version	Command history
08.0.30	This command was introduced.
08.0.90	The maximum timeout value was increased to 120 minutes.

flexlink backup

Configures a pair of interfaces (physical or LAG) as Flexlink interfaces which act as an active link and backup link to provide link redundancy.

Syntax

flexlink backup interface { **ethernet** *unit/slot/port* | **lag** *lag-id* }

no flexlink backup interface { **ethernet** *unit/slot/port* | **lag** *lag-id* }

Command Default

Flexlink is not enabled by default.

Parameters

interface
Specifies the backup interface.

ethernet *unit/slot/port*
Specifies an Ethernet interface as the backup link.

lag *lag-id*
Specifies a LAG interface as the backup link.

Modes

Interface configuration mode

LAG interface configuration mode

Usage Guidelines

The interface under which the **flexlink backup** command is run is automatically considered as the active link.

The Flexlink interfaces (both the active link and backup link) must be physically up to ensure expected failover forwarding behavior.

A maximum of 32 Flexlink instances can be configured.

Flexlink interfaces must be part of the same VLAN domain. The addition and deletion of Flexlink interfaces on the VLAN must be organized as a port pair.

Spanning support is disabled on flexlink interfaces.

The forwarding state of the Flexlink interfaces are controlled by Flexlink feature, so other Layer 2 features cannot co-exist on those interfaces. Following features cannot be enabled on Flexlink interfaces:

- Spanning Tree protocol (STP)
- Per-VLAN protocols (Metro Ring Protocol [MRP] and Virtual Switch Redundancy Protocol [VSRP])
- Multiple VLAN Registration Protocol (MVRP)
- Private VLAN (PVLAN)

- Port MAC security (PMS)
- Protected ports
- Flexible Authentication
- Loop detection

ACL configurations can be applied, but ingress or egress traffic on the backup link will not take effect.

The **no** form of the command deletes the Flexlink instance.

Examples

The following example configures Ethernet port 1/1/9 as the active link and Ethernet port 1/1/10 as the backup link of a Flexlink instance.

```
device# configure terminal
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9)# flexlink backup interface ethernet 1/1/10
```

The following example configures a pair of LAG interfaces as Flexlink interfaces.

```
device# configure terminal
device(config)# interface lag 10
device(config-lag-if-lg10)# flexlink backup interface lag 11
```

History

Release version	Command history
09.0.00	This command was introduced.

flexlink preemption delay

Configures the time delay before a Flexlink interface preempts the other link according to the configured preemption scheme.

Syntax

flexlink preemption delay *time-delay*

no flexlink preemption delay *time-delay*

Command Default

No preemption delay.

Parameters

time-delay

Specifies the amount of time an interface waits before preempting the other link and becomes the active link. The valid range is from 10 seconds through 300 seconds. Default value is 0.

Modes

Interface configuration mode

LAG interface configuration mode

Usage Guidelines

Preemption delay configuration is applicable only for **forced** and **bandwidth** preemption modes.

Preemption delay configuration and the preemption mode **off** are mutually exclusive.

The **no** form of the command unconfigures the preemption delay.

Examples

The following example sets the preemption delay to 100 seconds.

```
device# configure terminal
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9)# flexlink preemption delay 100
```

History

Release version	Command history
09.0.00	This command was introduced.

flexlink preemption mode

Configures the preemption scheme to specify the preferred Flexlink interface for forwarding traffic.

Syntax

flexlink preemption mode [**forced** | **bandwidth** | **off**]

no flexlink preemption mode [**forced** | **bandwidth**]

Command Default

The default preemption mode is off.

Parameters

forced

Specifies to provide precedence to the configured active link and always preempt the backup link.

bandwidth

Specifies to preempt the Flexlink interface with lesser bandwidth and choose the interface with higher bandwidth as the active link.

off

No preemption will take place. When active link fails, the backup interface will take over and forward the traffic.

Modes

Interface configuration mode

LAG interface configuration mode

Usage Guidelines

The forced and bandwidth preemption modes work in conjunction with the preemption delay value (if configured).

The preemption mode cannot be unconfigured if the preemption delay is configured to a non-default value.

The **no** form of the command is applicable only to the forced and bandwidth preemption modes.

The **no** form of the command unconfigures the preemption mode and resets the Flexlink interface pair to the default preemption mode (off).

Examples

The following example sets the configured active link to always preempt the backup link.

```
device# configure terminal
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9)# flexlink preemption mode forced
```

History

Release version	Command history
09.0.00	This command was introduced.

flow-control

Enables or disables flow control and flow control negotiation, and advertises flow control.

Syntax

flow-control[**both**|**generate-only**|**honor-only**]

no flow-control[**both**|**generate-only**|**honor-only**]

Command Default

Flow control is enabled.

Parameters

both
Flow control in PAUSE generation and honoring mode.

generate-only
Flow control in PAUSE generation only mode.

honor-only
Flow control in PAUSE honoring (Default) mode.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

You can configure the **store-and- forward** command in global configuration mode to enable the store-and-forward method for packet-forwarding.

By default, when flow control is enabled globally and auto-negotiation is on, flow control is enabled and advertised on 10/100/1000M ports. If auto-negotiation is off or if the port speed was configured manually, flow control is neither negotiated with nor advertised to the peer.

NOTE
Enabling only port auto-negotiation does not enable flow control negotiation. You must use the **flow-controlneg-on** command to enable flow-control negotiation.

The **no** form of the command disables flow control.

Examples

The following example disables flow control globally.

```
device(config)# no flow-control
```

The following example enables flow control on ethernet ports 1/1/11 to 1/1/15.

```
device(config)# interface ethernet 1/1/11 to 1/1/15
device(config-mif-1/1/11-1/1/15)# flow-control
```

The following example disables flow control on ethernet port 1/1/9.

```
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9)# no flow-control
```

History

Release version	Command history
08.0.20	This command was modified. Enabling only auto-negotiation does not enable flow-control negotiation.

force-up ethernet

Forces the member port of a dynamic LAG (Link Aggregation Group) to be logically operational even if the dynamic LAG is not operating.

Syntax

force-up ethernet *port*

no force-up ethernet *port*

Command Default

The member ports of a dynamic LAG are logically operational only if the dynamic LAG is operating.

Parameters

port

Specifies the port.

Modes

Dynamic LAG configuration mode

Usage Guidelines

The **no** form of the command causes the specified port to be logically operational only when the dynamic LAG is operating.

When the dynamic LAG is not operational, the port goes to "force-up" mode. In this mode, the port is logically operational, which enables a PXE-capable host to boot from the network using this port. Once the host successfully boots from the network, the dynamic LAG can connect the host to the network with the LAG link. Even if the dynamic LAG fails later, this port is brought back to "force-up" mode and remains logically operational.

A port that is in "force-up" mode has the operational status ("Ope") of "Frc". Use the **show lag** command to display the operational status.

If any port in a dynamic LAG receives an LACPDU, the port in force-up mode leaves force-mode and becomes a member port in the dynamic LAG.

Examples

The following example enables PXE boot support on member port 3/1/1 of a dynamic LAG R4-dyn.

```
device(config)# lag R4-dyn
device(config-lag-R4-dyn)# force-up ethernet 3/1/1
```

History

Release version	Command history
08.0.01	This command was introduced.

format disk0

Formats the external USB.

Syntax

format disk0

Modes

User EXEC mode

Examples

The following example formats the external USB.

```
device# format disk0
Are you sure?(enter 'y' or 'n'): formatting The External USB (disk0) of size 64.2GB
```

History

Release version	Command history
08.0.30	This command was introduced.

forwarding-profile

Configures a forwarding profile.

Syntax

forwarding-profile { **profile1** | **profile2** | **profile3** |**profile4** }

no forwarding-profile { **profile1** | **profile2** | **profile3** |**profile4** }

Command Default

The default forwarding profile is profile1.

Parameters

profile1

Specifies the default forwarding profile.

profile2

Specifies the non-default forwarding profile, profile2.

profile3

Specifies the non-default forwarding profile, profile3.

profile4

Specifies the non-default forwarding profile, profile4.

Modes

Global configuration mode

Usage Guidelines

This command is supported for ICX 8200, ICX 7850, and ICX 7550 devices.

The **profile4** keyword is not supported for ICX 8200 and ICX 7550 devices.

This command can be used only during the initialization process. The selected forwarding profile is available after a reload. After using the **forwarding-profile** command, you must use the **write-memory** and **reload** commands to place the change into effect.

When the forwarding profile is changed using this command, the maximum system parameters for IPv4 routes, IPv6 routes, IGMP groups, MLD groups, PIM mcache, and PIMv6 mcache take the value from the configured profile. The IP route default VRF, IP route VRF, IPv6 route VRF, and IPv6 default VRF are reset.

For ICX 8200 devices, non-optimization of Multicast snooping and Routing is not supported for Profile 3.

TABLE 8 System-max Entries Set for a Forwarding Profile for ICX 8200 Devices

System-max entries	profile1	profile2	profile3
MAC addresses	32768	32768	32768
IPV4 routes	16384	4096	16384

TABLE 8 System-max Entries Set for a Forwarding Profile for ICX 8200 Devices (continued)

System-max entries	profile1	profile2	profile3
IPV6 routes	4096	8192	4096
IGMP snooping cache entries	1000	1000	4096
IGMP snooping group addresses	1000	1000	4096
MLD snooping cache entries	512	512	512
MLD snooping group addresses	512	512	512
PIMv4 mcache entries	1000	1000	4096
PIMv6 mcache entries	512	512	512
IP next hops	7168	7168	2048

TABLE 9 System-max Entries Set for a Forwarding Profile for ICX 7850 Devices

System-max entries	profile1 (L3: Layer 3)	profile2 (L2: Layer 2)	profile3 (SP: service provider)	profile4
MAC addresses	32768	294912	56320	163840
IPV4 routes	307200	16384	43008	131072
IPV6 routes	11264	4096	35840	11264
IGMP snooping cache entries	6144	6144	8192	6144
IGMP snooping group addresses	6144	6144	8192	6144
MLD snooping cache entries	2048	2048	6144	2048
MLD snooping group addresses	2048	2048	6144	2048
PIMv4 mcache entries	6144	6144	8192	6144
PIMv6 mcache entries	2048	2048	8192	2048
IP next-hop	62464	47104	57344	40960

TABLE 10 System-max Entries Set for a Forwarding Profile for ICX 7550 Devices

System-max entries	profile1 (L3: Layer 3)	profile2 (L2: Layer 2)	profile3 (Balanced)
MAC addresses	16384	114688	32768
IPV4 routes	97280	8192	21504
IPV6 routes	8192	2048	17408
IGMP snooping cache entries	6144	6144	6144
IGMP snooping group addresses	6144	6144	6144
MLD snooping cache entries	2048	2048	2048
MLD snooping group addresses	2048	2048	2048
PIMv4 mcache entries	6144	6144	6144
PIMv6 mcache entries	2048	2048	2048
IP next-hop	21504	21504	21504

When **profile3** is used for ICX 7850 devices, it is recommended to configure the maximum number of IPv6 neighbors to 65536. Refer to the **system-max ip6-neighbor** command for more information.

When **profile3** is used for ICX 7850 devices, PIMv4 and PIMv6 can simultaneously scale to 8192 mcache entries each.

When uRPF is enabled, scaling numbers for IPv4 and IPv6 routes are halved for ICX 7850 devices.

The **no** form of the command restores the default forwarding profile, profile1.

Examples

The following example configures the predefined forwarding profile “profile2” for an ICX 7850 device.

```
ICX7850# configure terminal
ICX7850(config)# forwarding-profile profile2

Perform a write mem and reload for profile2 profile to take effect
```

The following example configures the default forwarding profile “profile1” for an ICX 7850 device if another forwarding profile has already been configured.

```
ICX7850# configure terminal
device(config)# forwarding-profile profile1

Perform a write mem and reload for profile1 profile to take effect
```

The following example configures the predefined forwarding profile “profile3” for an ICX 7550 device.

```
ICX7550# configure terminal
ICX7550(config)# forwarding-profile profile3
Perform a write mem and reload for profile3 profile to take effect
The profile supports the following values
Parameter-name                  profile3
mac                                32768
ip-route                           21504
ip6-route                          17408
igmp-snoop-mcache                   6144
igmp-snoop-group-add                6144
mld-snoop-mcache                    8192
mld-snoop-group-addr                8192
pim-hw-mcache                       6144
pim6-hw-mcache                      2048
hw-ip-next-hop                     21504

Default and Max values of the following system-max parameters will be adjusted as
shown below
These system parameters will get reset to their default values. If required, please
reconfigure them after reload.
System Parameter               Default
Max
                imum

ip-route-default-vrf           10752
215
              04
ip-route-vrf                   672
215
                04
ip6-route-default-vrf          4975
174
                08
ip6-route-vrf                  2487
174
                08
The following configuration will get reset to their default values. If required,
please reconfigure them after reload.
address-family ipv4|ipv6 max-route, ip igmp max-group-addresses, ipv6 mld max-group-addresses
```

History

Release version	Command history
08.0.90	This command was introduced for ICX 7850 devices.
08.0.95	Support was added for ICX 7550 devices. All profiles were updated to include configurations for next hops and routes. For ICX 7850 devices, the **profile3** and **profile4** keywords were added.
10.0.00	Support was added for ICX 8200 devices.

Related Commands

system-max ip6-neighbor

gig-default

Configures the Gbps fiber negotiation mode on individual ports, overriding the global configuration mode.

Syntax

gig-default{**auto-gig**|**compatibility-mode**|**neg-full-auto**|**neg-off** }

no gig-default{**auto-gig**|**compatibility-mode**|**neg-full-auto**|**neg-off** }

Command Default

The globally configured Gbps negotiation mode is the default mode for all Gbps fiber ports.

Parameters

auto-gig
: Configures the port to try to perform a handshake with the other port to exchange capability information.

compatibility-mode
: Configures compatibility mode, to enable CLASS 73 auto-negotiation, on individual ports.

neg-full-auto
: Configures the port to first try to perform a handshake with the other port to exchange capability information. If the other port does not respond to the handshake attempt, the port uses the manual configuration (or the default if an administrator has not configured the information). That is, the device first performs auto-negotiation and, if it fails, then performs non-auto-negotiation. This is the default configuration.

neg-off
: Configures the port to not try to perform a handshake. Instead, the port uses information that was manually configured by an administrator.

Modes

Interface configuration mode

Usage Guidelines

When Gbps negotiation mode is turned off (using the **gig-default neg-off** command), the device may inadvertently take down both ends of a link. This is a hardware limitation for which there is currently no workaround.

The following limitations apply to the **gig-default neg-off** command:

- The port must be at least a 10-Gbps port.
- The port must have a speed of at least 1000 Mbps. You can add speed optics only to those ports where it is required. 1-Gbps and 10-Gpbs ports have auto-negotiation enabled. Therefore, the **gig-default neg-off** command must be used only if the remote end does not enable auto-negotiation.

When compatibility mode is used, (using the **gig-default compatibility-mode** command), CL73 auto-negotiation mode is enabled. The **gig-default compatibility-mode** command resets the configuration to the default auto-negotiation settings and removes CL73 auto-negotiation mode.

NOTE
The **compatibility-mode** keyword is supported only for ICX 7650 and ICX 7850 switches only.

The **no** form of the command resets the configuration to the default of trying to perform a handshake with other ports to exchange capability information.

Examples

The following example sets the negotiation mode to auto-gig mode for ports 1/1/1 to 1/1/4.

```
device(config)# interface ethernet 1/1/1 to 1/1/4
device(config-mif-1/1/1-1/1/4)# gig-default auto-gig
```

The following example sets the compatibility mode for port 1/2/1.

```
device# configure terminal
device(config)# interface ethernet 1/2/1
device(config-if-1/2/1)# gig-default compatibility-mode
```

History

Release version	Command history
08.0.90g	The **compatibility-mode** keyword was added.
08.0.95	Limitations for the **gig-default neg-off** command were added.
09.0.00a	Limitations for the **gig-default neg-off** command were added.

graceful-restart (BGP)

Enables the BGP graceful restart capability.

Syntax

graceful-restart [**purge-time** *seconds* | **restart-time** *seconds* | **stale-routes-time** *seconds*]

no graceful-restart [**purge-time** *seconds* | **restart-time** *seconds* | **stale-routes-time** *seconds*]

Command Default

Graceful restart is enabled globally.

Parameters

purge-time *seconds*

Specifies the maximum period of time, in seconds, for which a restarting device maintains stale routes in the BGP routing table before purging them. Range is from 1 to 3600 seconds. The default value through 600 seconds.

restart-time *seconds*

Specifies the restart time, in seconds, advertised to graceful-restart-capable neighbors. Range is from 1 through 3600 seconds. The default value is 120 seconds.

stale-routes-time *seconds*

Specifies the maximum period of time, in seconds, that a helper device will wait for an End-of-RIB (EOR) marker from a peer. All stale paths are deleted when this time period expires. Range is from 1 through 3600 seconds. The default value is 360 seconds.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

Use this command to enable or disable the graceful restart capability globally for all BGP neighbors in a BGP network. If the graceful restart capability is re-enabled after a BGP session has been established, the neighbor session must be cleared for GR to take effect.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Use this command in BGP configuration mode to disable or re-enable the BGP4 graceful restart capability globally, or to alter the default parameters. Use this command in address-family IPv6 unicast configuration mode to disable or re-enable the BGP4+ graceful restart capability globally or to alter the default parameters.

The **purge-time** parameter is applicable for both restarting and helper devices. The timer starts when a BGP connection is closed. The timer ends when an EOR is received from all nodes, downloaded into BGP and an EOR sent to all neighbors. The configured purge-time timer value is effective only on the configured node.

The **restart-time** parameter is applicable only for helper devices. The timer starts at the time the BGP connection is closed by the remote peer and ends when the Peer connection is established. The configured restart time timer value is effective only on the peer node, and not in the configured node. During negotiation time, the timer value is exchanged.

The **stale-routes-time** parameter is applicable only for helper devices. The timer starts when the peer connection is established once the HA-failover peer node has been established. The timer ends at the time an EOR is received from the peer. The configured stale-time timer value is effective only on the configured node.

Use the **clear ip bgp neighbor** command with the **all** parameter for the changes to the GR parameters to take effect immediately.

The **no** form of the command disables the BGP graceful restart capability globally for all BGP neighbors.

Examples

The following example disables the BGP4 graceful restart capability.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# no graceful-restart
```

The following example re-enables the BGP4 graceful restart capability.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 1
device(config-bgp-router)# neighbor 1.1.1.1 remote-as 2
device(config-bgp-router)# graceful-restart
```

The following example disables the BGP4+ graceful restart capability.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# no graceful-restart
```

The following example re-enables the BGP4+ graceful restart capability.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 1
device(config-bgp-router)# neighbor 1000::1 remote-as 2
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 1000::1 activate
device(config-bgp-ipv6u)# graceful-restart
```

The following example sets the purge time to 240 seconds at the IPv4 address family configuration level.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 1
device(config-bgp-router)# neighbor 1.1.1.1 remote-as 2
device(config-bgp-router)# graceful-restart
%Warning: Please clear the neighbor session for the parameter change to take effect!
device(config-bgp-router)# graceful-restart purge-time 240
```

The following example sets the restart time to 60 seconds at the IPv4 address family configuration level.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 1
device(config-bgp-router)# neighbor 1.1.1.1 remote-as 2
device(config-bgp-router)# graceful-restart
%Warning: Please clear the neighbor session for the parameter change to take effect!
device(config-bgp-router)# graceful-restart restart-time 60
%Warning: Please clear the neighbor session for the parameter change to take effect!
```

The following example sets the stale-routes time to 180 seconds at the IPv6 address family configuration level.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 1
device(config-bgp-router)# neighbor 1000::1 remote-as 2
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 1000::1 activate
device(config-bgp-ipv6u)# graceful-restart
%Warning: Please clear the neighbor session for the parameter change to take effect!
device(config-bgp-ipv6u)# graceful-restart stale-routes-time 180
%Warning: Please clear the neighbor session for the parameter change to take effect!
```

graceful-restart (OSPFv2)

Enables the OSPF Graceful Restart (GR) capability.

Syntax

graceful-restart [**helper-disable** | **restart-time** *seconds*]

no graceful-restart

Command Default

Graceful restart and graceful restart helper capabilities are enabled.

Parameters

helper-disable

Disables the GR helper capability.

restart-time

Specifies the maximum restart wait time, in seconds, advertised to neighbors. The default value is 120 seconds. The configurable range of values is from 10 through 1800 seconds.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

NOTE
GR is not supported for standalone devices.

Use **no graceful-restart helper-disable** to re-enable the GR helper capability.

The **no** form of the command disables the graceful restart capability.

Examples

The following example disables the GR helper capability.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# graceful-restart helper-disable
```

The following example re-enables the GR helper capability.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# no graceful-restart helper-disable
```

The following example re-enables the GR capability.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# graceful-restart
```

The following example re-enables the GR capability and changes the maximum restart wait time from the default value to 240 seconds.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# graceful-restart restart-time 240
```

graceful-restart helper (OSPFv3)

Enables the OSPFv3 graceful restart (GR) helper capability.

Syntax

graceful-restart helper { **disable** | **strict-lsa-checking** }

no graceful-restart helper

Command Default

GR helper is enabled.

Parameters

disable

Disables the OSPFv3 GR helper capability.

strict-lsa-checking

Enables the OSPFv3 GR helper mode with strict link-state advertisement (LSA) checking.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

The **no** form of the command disables the GR helper capability on a device.

Examples

The following example enables GR helper and sets strict LSA checking.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router-ospf)# graceful-restart helper strict-lsa-checking
```

graft-retransmit-timer

Configures the time between the transmission of graft messages sent by a device to cancel a prune state.

Syntax

graft-retransmit-timer *seconds*

no graft-retransmit-timer *seconds*

Command Default

The graft retransmission time is 180 seconds.

Parameters

seconds

Specifies the time in seconds. The range is 60 through 3600 seconds. The default is 180 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the default graft retransmission time, 180 seconds.

Messages sent by a device to cancel a prune state are called graft messages. When it receives a graft message, the device responds with a Graft Ack (acknowledge) message. If this Graft Ack message is lost, the device that sent it resends it.

Examples

This example configures a graft retransmission timer to 90 seconds.

```
device(config)# router pim
device(config-pim-router)# graft-retransmit-timer 90
```

group-router-interface

Creates router interfaces for each VLAN in the VLAN group.

Syntax

group-router-interface

no group-router-interface

Command Default

A group router interface is not configured.

Modes

VLAN group configuration mode

Usage Guidelines

The **group-router-interface** command creates router interfaces for each VLAN in the VLAN group by using the VLAN IDs of each of the VLANs as the corresponding virtual interface number. This command enables a VLAN group to use a virtual routing interface group. You can enter this command when you configure the VLAN group for the first time or later, after you have added tagged ports to the VLAN, and so on.

If a VLAN group contains VLAN IDs greater than the maximum virtual interface number allowed, the **group-router-interface** command will be rejected.

The **no** form of the command disables the VLAN group router interface.

Examples

The following example shows how to create a router interface for a VLAN.

```
device(config)# vlan-group 1 vlan 10
device(config-vlan-group-1)# group-router-interface
```

hardware-drop-disable

Disables passive multicast route insertion (PMRI).

Syntax

hardware-drop-disable

no hardware-drop-disable

Command Default

PMRI is enabled.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the default and enables PMRI.

To prevent unwanted multicast traffic from being sent to the CPU, PIM routing and PMRI can be used together to ensure that multicast streams are forwarded out only on ports with interested receivers and unwanted traffic is dropped in hardware on Layer 3 switches. To disable this process, use the **hardware-drop-disable** command.

NOTE
Disabling hardware-drop does not immediately take away existing hardware-drop entries, they will go through the normal route aging processing when the traffic stops.

Examples

This example disables PMRI.

```
device(config)#router pim
device(config-pim-router)# hardware-drop-disable
```

hello-interval (VRRP)

Configures the interval at which master Virtual Router Redundancy Protocol (VRRP) routers advertise their existence to the backup VRRP routers.

Syntax

hello-interval [**msec**] *interval*

no hello-interval [**msec**] *interval*

Command Default

Hello messages from VRRP master routers are sent to backup routers every second.

Parameters

msec *interval*

Interval, in milliseconds, at which a master VRRP router advertises its existence to the backup VRRP routers. Valid values range from 100 through 84000. The default is 1000. VRRP-E does not support the hello message interval in milliseconds.

interval

Sets the interval, in seconds, for which a VRRP backup router waits for a hello message from the VRRP master router before determining that the master is offline. Valid values range from 1 through 84. The default value is 1.

Modes

VRID interface configuration mode

Usage Guidelines

A VRRP master router periodically sends hello messages to the backup routers. The backup routers use the hello messages as verification that the master is still online. If the backup routers stop receiving the hello messages for the period of time specified by the dead interval, the backup routers determine that the master router is dead. At that point, the backup router with the highest priority becomes the new master router.

By default, the dead interval is internally derived from the hello interval. It is equal to 3 times the hello interval plus the skew time, where the skew time is equal to (256 minus the priority) divided by 256. Generally, if you change the hello interval on the master VRRP router using the **hello-interval** command, you also should also change the dead interval on the VRRP backup routers using the **dead-interval** command.

The **hello-interval** command is configured only on master VRRP routers and is supported by VRRP and VRRP-E.

The **no** form resets the hello message interval to its default value of 1000 milliseconds (1 second).

NOTE
VRRP-E does not support the hello message interval in milliseconds.

Examples

The following example enables advertisements from the VRRP master router and sets the hello message interval to 10,000 milliseconds.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner
device(config-if-e1000-1/1/6-vrid-1)# ip address 10.53.5.1
device(config-if-e1000-1/1/6-vrid-1)# hello-interval msec 10000
device(config-if-e1000-1/1/6-vrid-1)# activate
VRRP router 1 for this interface is activating
```

The following example enables advertisements from the VRRP-E master router and sets the hello message interval to 15 seconds.

```
device# configure terminal
device(config)# router vrrp-extended
device(config)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.5.3/24
device(config-if-e1000-1/1/5)# ip vrrp-extended vrid 2
device(config-if-e1000-1/1/5-vrid-2)# backup priority 50 track-priority 10
device(config-if-e1000-1/1/5-vrid-2)# ip-address 10.53.5.1
device(config-if-e1000-1/1/5-vrid-2)# hello-interval 15
device(config-if-e1000-1/1/5-vrid-2)# activate
VRRP router 2 for this interface is activating
```

hello-interval (VSRP)

Configures the number of seconds between hello messages from the master to the backups for a given VRID.

Syntax

hello-interval { **msec** *interval* | *interval* }

no hello-interval { **msec** *interval* | *interval* }

Command Default

Hello messages from master are sent to backup every second.

Parameters

msec *interval*

Interval, in milliseconds, at which a master advertises its existence to the backup. Valid values range from 100 through 40900. The default is 1000.

interval

Sets the interval, in seconds, for which a backup waits for a hello message from the master before determining that the master is offline. Valid values range from 1 through 84. The default value is 1.

Modes

VSRP VRID configuration mode

Usage Guidelines

The Master periodically sends hello messages to the backup. The backup routers use the hello messages as verification that the master is still online. If the backup routers stop receiving the hello messages for the period of time specified by the dead interval, the backup routers determine that the master router is dead. At that point, the backup router with the highest priority becomes the new master router.

By default, the dead interval is internally derived from the hello interval. It is equal to 3 times the hello interval plus one-half second. Generally, if you change the hello interval on the master router using the **hello-interval** command, you also should also change the dead interval on the backup routers using the **dead-interval** command.

The **no** form resets the hello message interval to its default value of 1000 milliseconds (1 second).

Examples

The following example sets the hello message interval to 10,000 milliseconds.

```
device# configure terminal
device(config)# vlan 400
device(config-vlan-400)# tagged ethernet 1/1/4 to 1/1/9
device(config-vlan-400)# vsrp vrid 4
device(config-vlan-400-vrid-4)# hello-interval msec 10000
```

The following example sets the hello message interval to 15 seconds.

```
device# configure terminal
device(config)# vlan 400
device(config-vlan-400)# tagged ethernet 1/1/4 to 1/1/9
device(config-vlan-400)# vsrp vrid 4
device(config-vlan-400-vrid-4)# hello-interval 15
```

hello-timer

Configures the interval at which hello messages are sent out of Protocol Independent Multicast (PIM) interfaces.

Syntax

hello-timer *seconds*

no hello-timer *seconds*

Command Default

The hello interval is 30 seconds.

Parameters

seconds

Specifies the interval in seconds. The range is 10 through 3600 seconds. The default is 30 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the default hello interval, 30 seconds.

Devices use hello messages to inform neighboring devices of their presence.

Examples

This example configures a hello interval of 120 seconds on all ports on a device operating with PIM.

```
device(config)# router pim
device(config-pim-router)# hello-timer 120
```

hitless-failover enable

Enables hitless stacking failover and switchover. The standby controller is allowed to take over the active role without reloading the stack when failover occurs.

Syntax

hitless-failover enable

no hitless-failover enable

Command Default

Hitless stacking failover is enabled. In earlier releases, failover and switchover were disabled by default.

Modes

Global configuration mode

Usage Guidelines

Use the **no** form of the command to disable hitless stacking failover. The change takes effect immediately.

The **hitless-failover enable** and **no hitless-failover enable** commands must be executed from the active stack controller.

You must assign a stack mac address to the device using the **stack mac address** command before you can execute the **hitless-failover enable** command.

Examples

The following example enables hitless stacking switchover and failover on the active controller for the stack.

```
device(config)# hitless-failover enable
```

History

Release version	Command history
08.0.00a	This command was introduced.
08.0.20	Hitless failover is enabled by default.

hold-down-interval

Configures the hold-down interval.

Syntax

hold-down-interval *number*

no hold-down-interval *number*

Command Default

The default hold-down time interval is 3 seconds.

Parameters

number

The time interval for the new master to hold the traffic. The time interval ranges from 1 through 84 seconds.

Modes

VSRP VRID configuration mode

Usage Guidelines

The hold-down interval prevents the occurrence of Layer 2 loops during failover by delaying the new master from forwarding traffic long enough to ensure that the failed master is unavailable.

The **no** form of the command sets the time interval to the default value.

Examples

The following example shows how to change the hold-down interval.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# hold-down-interval 4
```

hostname

Configures a system name for a device and saves the information locally in the configuration file for future reference.

Syntax

hostname *string*

no hostname

Command Default

The device has a factory-set hostname.

Parameters

string

Configures the system name. The name can be up to 255 alphanumeric characters. The host name should be enclosed in quotation marks if it contains spaces.

Modes

Global configuration mode

Usage Guidelines

When you configure a system name, the name replaces the default system name in the CLI command prompt.

The **no** form of the command removes the configured hostname.

Examples

The following example configures a system name.

```
device(config)# hostname headquarters
headquarters(config)#
```

host-max-num

Limits the number of hosts that are authenticated at any one time.

Syntax

host-max-num *number*

no host-max-num *number*

Command Default

There is no limit to the number of hosts that can be authenticated (0).

Parameters

number

Specifies the number of hosts that can be authenticated at any one time. The valid values are from 0 through 8192. The default is 0, that is there is no limit to the number of hosts that can be authenticated.

Modes

Web Authentication configuration mode

Usage Guidelines

The maximum number of hosts that can be authenticated at one time is 8192 or the maximum number of MAC addresses the device supports. When the maximum number of hosts has been reached, the device redirects any new host that has been authenticated successfully to the Maximum Host web page.

The **no** form of the command sets no limit (default).

Examples

The following example limits the number of hosts that can be authenticated at one time to 10.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# host-max-num 10
```

Commands I

icl-fwd-delay (MCT)

Sets the delay time after an ICL link comes up before regular traffic is forwarded. During the delay, only BPDU forwarding is allowed.

Syntax

icl-fwd-delay { *time* }

no icl-fwd-delay { *time* }

Command Default

No delay is configured by default.

Parameters

time

Defines the traffic forwarding delay time in seconds. Valid range is 0 through 30. The default setting is 0.

Modes

MCT cluster configuration mode

Usage Guidelines

If a device is connected to both cluster nodes on CEP ports making it a triangle topology, set **icl-fwd-delay** to 10 seconds under cluster.

Examples

The following example configures a delay of 3 seconds for an MCT cluster.

```
device# configure terminal
device(config)# cluster mct_mm_stk 1000
device(config-cluster-mct_mm_stk)# icl-fwd-delay 3
device(config-cluster-mct_mm_stk)# exit
device(config)#
```

History

Release version	Command history
09.0.10	This command was introduced.

ignore-temp-shutdown

Prevents shutdown of RUCKUS ICX devices at the threshold shutdown temperature.

Syntax

ignore-temp-shutdown

no ignore-temp-shutdown

Command Default

By default, the function is disabled.

Modes

Global configuration mode

Stack-unit configuration mode

Usage Guidelines

Use the **no** form of the command to re-enable shutdown based on temperature threshold. The **no** form of the command disables the battleshort mode at global level and at unit level.

Either the global battleshort mode or unit-specific battleshort mode is enabled, but not both.

This command can be executed at a global level and at a unit level. If the command is enabled or disabled at global level, it applies to all the units which are part of the stack. If the command is enabled or disabled at a unit level, it applies only to that unit alone in the stack. To execute this command at a unit level, specify the unit ID at Global configuration mode.

Examples

The following example enables battleshort mode on a standalone device or globally on all stack units.

```
device# configure terminal
device(config)# ignore-temp-shutdown
Ignore temperature shutdown threshold has been enabled
```

The following example enables battleshort mode on an individual stack member.

```
device# configure terminal
device(config)# stack unit 2
device(config-unit-2)# ignore-temp-shutdown
Ignore temperature shutdown threshold has been enabled in Stack unit 2
```

History

Release version	Command history
08.0.60	The command was introduced.

ike-profile

Configures an IKEv2 profile for an IPsec profile.

Syntax

ike-profile *name*

no ike-profile *name*

Command Default

The default IKEv2 profile is **def-ike-profile**.

Parameters

name

Specifies the name of an IKEv2 profile.

Modes

IPsec profile configuration mode

Usage Guidelines

When an IPsec profile is created, it is automatically configured to use the default IKEv2 profile. Use this command to configure an alternate IKEv2 profile for the IPsec profile.

The **no** form of the command restores the default IKEv2 profile configuration for the IPsec profile.

Examples

The following example shows how to configure an IKEv2 profile named ikev2_prof for an IPsec profile named ipsec_prof.

```
device(config)# ipsec profile ipsec_prof
device(config-ipsec-profile-ipsec_prof)# ike-profile ikev2_prof
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 auth-proposal

Creates an Internet Key Exchange version 2 (IKEv2) authentication proposal and enters configuration mode for the proposal.

Syntax

ikev2 auth-proposal *auth-name*

no ikev2 auth-proposal *auth-name*

Parameters

auth-name

Specifies the name of an IKEv2 authentication proposal.

Modes

Global configuration mode

Usage Guidelines

An IKEv2 authentication proposal defines the authentication methods used in IKEv2 peer negotiations.

An IKEv2 authentication proposal is activated by attaching it to an IKEv2 profile.

The **no** form of the command removes the IKEv2 authentication proposal configuration.

Examples

The following example shows how to create an IKEv2 authentication proposal named "secure" and enters configuration mode for the proposal.

```
device# configure terminal
device(config)# ikev2 auth-proposal secure
device(config-ike-auth-proposal-secure)#
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 exchange-max-time

Configures the maximum setup time for Internet Key Exchange version 2 (IKEv2) message exchange.

Syntax

ikev2 exchange-max-time *seconds*

no ikev2 exchange-max-time *seconds*

Command Default

The default value is 30 seconds.

Parameters

seconds

Specifies the maximum setup time in seconds. The time range is from 1 through 300 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the maximum setup time to the default value.

Examples

The following example sets the maximum setup time for IKEv2 message exchange to 50 seconds.

```
device# configure terminal
device(config)# ikev2 exchange-max-time 50
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 limit

Configures limits for the number of Internet Key Exchange version 2 (IKEv2) security association (SA) sessions.

Syntax

ikev2 limit { **max-in-negotiation-sa** *limit* | **max-sa limit** *limit* }

no ikev2 limit { **max-in-negotiation-sa** *limit* | **max-sa limit** *limit* }

Command Default

The default limit (for each type of SA session) is 256.

Parameters

max-in-negotiation-sa *limit*

Limits the total number of in-negotiation IKEv2 SA sessions. The range is from 1 through 256.

max-sa *limit*

Limits the total number of IKEv2 SA sessions. The range is from 1 through 256.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command returns the specified SA session limit to the default value.

Examples

The following example shows how to limit the maximum number of in-negotiation IKEv2 SA sessions to 10.

```
device# configure terminal
device(config)# ikev2 limit max-in-negotiation-sa 10
```

The following example shows how to limit the maximum number of IKEv2 SA sessions to 200.

```
device# configure terminal
device(config)# ikev2 limit max-sa 200
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 policy

Creates an Internet Key Exchange version 2 (IKEv2) policy and enters IKEv2 policy configuration mode.

Syntax

ikev2 policy *name*

no ikev2 policy *name*

Command Default

The default IKEv2 policy is **def-ike-policy**.

Parameters

name

Specifies the name of an IKEv2 policy.

Modes

Global configuration mode

Usage Guidelines

There is a default IKEv2 policy (**def-ike-policy**) that is used to protect IKEv2 SA negotiations. The default policy does not require configuration and has the following settings:

- **proposal**: **def-ike-prop**
- **local_address**: Not set; matches all local addresses
- **vrf**: Not set; matches the default-VRF

Use the **ikev2 policy** command to configure any additional IKEv2 policies that you need.

The **no** form of the command removes any IKEv2 policy configuration other than the default IKEv2 policy.

The default IKEv2 policy cannot be removed.

Only one IKEv2 policy can be selected for a local endpoint (single IPv4 address). Configuring multiple IKEv2 policies for the same IP address is invalid.

When multiple matching policies are identified during IKEv2 negotiations, the most recently created matching policy is used.

Examples

The following example creates an IKEv2 policy named test_policy1.

```
device# configure terminal
device(config)# ikev2 policy test_policy1
device(config-ike-policy-test_policy1)#
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 profile

Creates an Internet Key Exchange version 2 (IKEv2) profile and enters IKEv2 profile configuration mode.

Syntax

ikev2 profile *name*

no ikev2 profile *name*

Command Default

The default IKEv2 profile is **def-ike-profile**.

Parameters

name

Specifies the name of an IKEv2 profile.

Modes

Global configuration mode

Usage Guidelines

An IKEv2 profile defines the local and peer identities and the authentication proposal for an IKEv2 session.

The default IKEv2 profile (**def-ike-profile**) does not require configuration and has the following settings:

- **authentication**: **def-ike-auth-prop**
- **protected**: Any
- **local-identifier address**: 0.0.0.0
- **lifetime**: 2592000
- **keepalive**: 300

Use the **ikev2 profile** command to configure any additional IKEv2 profiles.

The **no** form of the command removes any IKEv2 profile configuration other than the default IKEv2 profile.

The default IKEv2 profile cannot be removed.

Examples

The following example shows how to create an IKEv2 profile named ikev2_profile1.

```
device# configure terminal
device(config)# ikev2 profile ikev2_profile1
device(config-ike-profile-ikev2_profile1)#
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 proposal

Creates an Internet Key Exchange version 2 (IKEv2) proposal and enters IKEv2 proposal configuration mode.

Syntax

ikev2 proposal *name*

no ikev2 proposal *name*

Command Default

The default IKEv2 proposal is **def-ike-proposal**.

Parameters

name

Specifies the name of an IKEv2 proposal.

Modes

Global configuration mode

Usage Guidelines

An IKEv2 proposal defines a set of algorithms that are used in IKEv2 peer negotiations.

There is a default IKEv2 proposal (**def-ike-proposal**) that does not require configuration and has the following settings:

- **encryption**: AES-CBC-256
- **prf**: SHA-384
- **integrity**: SHA-384
- **dh-group**: 20

Use the **ikev2 proposal** command to configure any additional IKEv2 proposals.

The default IKEv2 proposal configuration cannot be removed.

Examples

The following example shows how to create an IKEv2 proposal named test_proposal1.

```
device# configure terminal
device(config)# ikev2 proposal test_proposal1
device(config-ike-proposal-test_proposal1)#
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 retransmit-interval

Configures the delay time for resending Internet Key Exchange version 2 (IKEv2) messages.

Syntax

ikev2 retransmit-interval *time*

no ikev2 retransmit-interval *time*

Command Default

The default delay time is 5 seconds.

Parameters

time

Specifies the delay time in seconds. The time ranges from 1 through 60.

Modes

Global configuration mode

Usage Guidelines

The retransmit interval increases exponentially.

The **no** form of the command restores the default value.

Examples

The following example show how to configure the delay time for resending IKEv2 messages to 20 seconds.

```
device# configure terminal
device(config)# ikev2 retransmit-interval 20
```

History

Release version	Command history
08.0.50	This command was introduced.

ikev2 retry-count

Configures the maximum number of attempts to retransmit an Internet Key Exchange version 2 (IKEv2) message.

Syntax

ikev2 retry-count *number*

no ikev2 retry-count *number*

Command Default

The default number of attempts is 5.

Parameters

number

Specifies the maximum number of attempts to retransmit an IKE message. The range is from 1 through 25.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the retry count to the default value.

Examples

The following example shows how to configure the number of retry attempts for transmitting an IKEv2 message to 8.

```
device# configure terminal
device(config)# ikev2 retry-count 8
```

History

Release version	Command history
08.0.50	This command was introduced.

image-auto-copy disable

Turns off the auto image copy function used in a stack configuration to restore all units to the same software image.

Syntax

image-auto-copy disable

no image-auto-copy disable

Command Default

Auto image copy is enabled by default.

Modes

Global configuration mode

Usage Guidelines

Use this command when you want to have manual control over image updates in the stack or bridge port extension domain.

The auto image copy process is not triggered if the major versions of the mismatched units are not the same. For example, if the image version is 8.0.30 in the mismatched unit, it cannot be automatically updated to 8.0.40. However, if an 8.0.40 image is present in the mismatched unit, and it needs to be updated to 8.0.40b, the auto image copy process works.

Use the **show stack detail** or the **show running-config** command to determine whether auto image copy is enabled.

The **no** form of the command re-enables auto image copy, which restarts immediately and ensures all stack units have the same image.

Examples

The following example disables auto image copy.

```
device(config)# image-auto-copy disable
```

History

Release version	Command history
08.0.40	This command was introduced.

import-users

Imports a text file of user records from a TFTP server to the device.

Syntax

import-users tftp *ip-address* **filename** *name*

Parameters

tftp *ip-address*

Specifies the IP address of the TFTP server from which the file must be imported.

filename *name*

Specifies the name of the file to import from the TFTP server.

Modes

Local user database configuration mode

Usage Guidelines

Before importing the file, make sure it adheres to the ASCII text format. The text file to be imported must be in the following ASCII format.

```
[delete-all]
[no] username
username1
password
password1
cr
[no] username
username2
password
password2
cr
...
```

The **delete-all** command entry in the text file indicates that the user records in the text file will replace the user records in the specified local user database on the switch. If the **delete-all** entry is not present, the new user records will be added to the specified local user database on the switch. The **delete-all** command entry is optional. If present, it must appear on the first line, before the first user record in the text file. If you want to delete a user entry from the specified local user database on the switch, use the **no username** command entry in the text file. User records that already exist in the local user database will be updated with the information in the text file when it is uploaded to the switch. For username1, username2, and so on, enter up to 31 ASCII characters.

Examples

The following example imports a text file of user records from a TFTP server.

```
device(config)# local-userdb userdb1
device(config-localuserdb-userdb1)# import-users tftp 192.168.1.1 filename userdb1
```

inactivity-timer

Configures the time a forwarding entry can remain unused before the device deletes it.

Syntax

inactivity-timer *seconds*

no inactivity-timer *seconds*

Command Default

The default inactive time is 180 seconds.

Parameters

seconds

Specifies the time in seconds. The range is 60 through 3600 seconds. The default is 180 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the default inactive time, 180 seconds.

A device deletes a forwarding entry if the entry is not used to send multicast packets. The Protocol Independent Multicast (PIM) inactivity timer defines how long a forwarding entry can remain unused before the device deletes it.

NOTE
The inactivity timer may not expire according to the configured time. You may notice a delay of 0 to 60 seconds over the configured value.

Examples

This example configures an inactive time to 90 seconds.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# inactivity-timer 90
```

History

Release version	Command history
08.0.60	Added note about the inactivity timer expiry.

include-port

Adds ports to the VSRP.

Syntax

include-port ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...]

no include-port ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...]

Command Default

By default, all the ports on which you configure a VRID are interfaces for the VRID.

Parameters

ethernet *stackid/slot/port*

Adds the Ethernet interface to the VRID.

to *stackid/slot/port*

Adds a range of Ethernet interfaces to the VRID.

Modes

VSRP VRID configuration mode

Usage Guidelines

Removing a port is useful because there is no risk of a loop occurring, such as when the port is attached directly to an end host and you plan to use a port in a metro ring.

When a port is removed from VSRP, the port remains in the VLAN but its forwarding state is not controlled by VSRP.

The **no** form of the command removes the ports from VSRP.

Examples

The following example shows how to remove a port from the VRID.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# no include-port ethernet 1/1/2
```

initial-contact-payload

Configures sending an initial contact message to a peer for an Internet Key Exchange version 2 (IKEv2) profile.

Syntax

initial-contact-payload

no initial-contact-payload

Command Default

No initial contact message is sent to a peer for an IKEv2 profile.

Modes

IKEv2 profile configuration mode

Usage Guidelines

The initial contact message is sent to ensure that old security associations (SAs) on the peer are deleted. When a device reboots, peers may have security associations (SAs) that are no longer valid. The initial contact message ensures that any old SAs on the peer are deleted.

The **no** form of the command disables initial contact messages from being sent to a peer for an IKEv2 profile.

Examples

The following example enables sending an initial contact message to a peer for an IKEv2 profile named ikev2_profile1.

```
device# configure terminal
device(config)# ikev2 profile ikev2_profile1
device(config-ike-profile-ikev2_profile1)# initial-contact-payload
```

History

Release version	Command history
08.0.50	This command was introduced.

initial-ttl

Configures the Hello packet time to live (TTL) (the number of hops a Hello message can traverse after leaving the device and before the Hello message is dropped).

Syntax

initial-ttl *number*

no initial-ttl *number*

Command Default

The default TTL is 2.

Parameters

number

Specifies the number of hops a Hello message can traverse after leaving the device and before the Hello message is dropped. The range is from 1 through 255. The default value is 2.

Modes

VSRP VRID configuration mode

Usage Guidelines

When a VSRP device (master or backup) sends a VSRP Hello packet, the device subtracts one from the TTL. Thus, if the TTL is 2, the device that originates the Hello packet sends it out with a TTL of 1. Each subsequent device that receives the packet also subtracts one from the packet TTL. When the packet has a TTL of 1, the receiving device subtracts 1 and then drops the packet because the TTL is zero.

A metro ring counts as one hop, regardless of the number of nodes in the ring.

The **no** form of the command sets the TTL to the default value.

Examples

The following examples sets the TTL to 5.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# initial-ttl 5
```

inline power

Configures inline power on Power over Ethernet (PoE) ports in interface configuration mode and link aggregation group (LAG) secondary ports in global configuration mode.

Syntax

inline power ethernet *interface* [**power-by-class** | *power-class* | **power-limit** *power-limit* | **priority** *priority -value*]

inline power ethernet *interface* [**power-by-class** | *power-class* | **power-limit** *power-limit* | **priority** *priority -value*]

NOTE

The **ethernet***interface* pair of parameters is required only if you want to configure inline power on secondary ports (you must use global configuration mode to do this).

Command Default

PoE is enabled by default and power is automatically allocated to all PoE-capable ports on bootup.

Parameters

ethernet

Specifies an ethernet interface. You can configure the **ethernet** keyword only in global configuration mode.

interface

Specifies the number of the ethernet interface. This is used only with the **ethernet** keyword.

power-by-class

Specifies the power limit based on class value. The range is 0-4. The default is 0. The power limit that gets applied for class 4 PD on PoH port will be 60W when overdrive is not enabled and 95W in overdrive mode.

power-limit

Specifies the power limit based on actual power value in mW. The range is 1000-15400|30000mW. The default is 15400|30000mW.

For PoH ports, the range is 1000-95000mW. By default maximum range is 60000mW and in PoE overdrive mode up to 95000mW is supported.

priority

Specifies the priority for power management. The range is 1 (highest) to 3 (lowest). The default is 3.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

As the 'inline power' configuration is applied on all PoE-capable ports by default, PD is powered up as soon as it is connected to the port. If the PoE power allocation needs to be disabled on bootup, use the **no inline power** command and do write memory. Upon reboot, all the saved PoE configurations would get applied and PoE will not be enabled.

Data link operation is decoupled with inline power by default and this behavior cannot be altered through user configuration.

You cannot configure inline power on PoE LAG ports in interface configuration mode because the interface-level configuration is not available in the CLI for LAG secondary ports. The **inline power ethernet** command enables you to configure inline power on secondary ports in global configuration mode.

The **no** form of the command disables PoE.

Examples

The following example configures inline power on LAG ports.

```
Device(config)# lag "mylag" static id 5
Device(config-lag-mylag)# ports ethernet 1/1/1 to 1/1/4
Device(config)#inline power ethernet 1/1/1 power-by-class 3
Device(config)#inline power ethernet 1/1/3 priority 2
Device(config)#inline power ethernet 1/1/4 power-limit 12000
```

History

Release	Command History
08.0.01	This command was modified to run in global configuration mode using the **ethernet** keyword. The **decouple-datalink** keyword was also introduced.
08.0.20	This command was modified to allow requisite PoH power limits.
08.0.70	This command was modified to change the default behavior to keep the PoE enabled. It was also modified to remove the **decouple-datalink** keyword.
08.0.90	This command was modified to change the default value of power-class and power-limit of PoH ports in non-overdrive mode.

inline power adjust class

Use these commands when powered devices (PDs) are entering an overload state as a result of faulty PDs power requests.

Syntax

inline power adjust classr *class* { **delta** *milliwatts* | **minimum** *milliwatts* }

no inline power adjust classr *class* { **delta** *milliwatts* | **minimum** *milliwatts* }

Parameters

class
: The detected PD class for which this configuration is applied to. Values ramge from 0 through 4.

delta
: Tthe amount of extra power allocated above the LLDP/CDP requested power.

milliwatts
: The additional allocated power measured in milliwatts.

minimum
: The minimum power that must be allocated, even if the PD LLDP/CDP requested power is lower than the configuration.

Modes

Global configuration mode

Usage Guidelines

These configurations should be used only when ports are entering an overload condition because of faulty PDs that are requesting lower power through LLDP/CDP messages and then consuming higher than the requested power.

The delta option assures the power allocation is equal to LLDP/CDP requested power plus delta power that is configured for that PD class.

The minimum option assures that the power allocation is equal to the maximum of LLDP/CDP power requested and the minimum power configured for that PD class.

Given a configuration of **inline power adjust class** 1 **delta** 800. If a class 1 PD is connected and is requesting power of 2600 milliWatts through LLDP/CDP, then the total allocation from the switch would be 3200 milliWatts. But if a class 2 PD is connected then there won't be any extra power allocation. If you want the extra power allocation for a class 2 PD, the configuration would be **inline power adjust class** 2 **delta** 800.

Examples

Set the detected PD class to 1 and allocate 800 milliwatts of extra power for the class.

```
device(config)# inline power adjust class 1 delta  800
```

Set the detected PD class to 1 and allocate minimum power (in milliwatts) regardless of the LLDP/CDP requested power level.

```
device(config)# inline power adjust class 1 minimum  3200
```

History

Release	Command History
08.0.30f	This command was introduced.

inline power allocation dynamic

Enables the dynamic Power over Ethernet (PoE) power management (PM) method.

Syntax

inline power allocation dynamic all

no inline power allocation dynamic all

Command Default

The dynamic PoE allocation is disabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the dynamic PoE allocation.

Examples

The following example enables dynamic PoE power allocation method on all or specific stack units of a switch.

```
device# configure terminal
device(config)# inline power allocation dynamic all
device(config)# inline power allocation dynamic 1
device(config)# inline power allocation dynamic 2,3,6
device(config)# inline power allocation dynamic 8-12
```

The following example disables dynamic PoE power allocation method on all or specific stack units of a switch.

```
device# configure terminal
device(config)# no inline power allocation dynamic all
device(config)# no inline power allocation dynamic 1
device(config)# no inline power allocation dynamic 2,3,6
device(config)# no inline power allocation dynamic 8-12
```

History

Release version	Command history
10.0.00	This command was introduced.

inline power couple-datalink

Links the behavior of PoE configuration with interface disable or interface enable configuration.

Syntax

inline power couple-datalink

no inline power

Command Default

Data link operation is decoupled with inline power by default.

Modes

Interface configuration mode

Usage Guidelines

When they are linked, the **interface disable** command also removes the power on the port (disables power when interface is disabled).

The following are some datalink operations that can affect the operational state of the PoE on PoE ports when datalink coupling is enabled:

- Using the **disable** command on the power sourcing equipment (PSE) port interface.
- LAG operational changes can affect the PoE power state if datalink coupling is enabled. That is power on LAG ports are impacted when LAG is undeployed, when the **disable** command is issued on LAG port, or when an interface is deleted from the LAG.

In situations where datalink operations tamper with PoE configurations and disable the power on the port, the interface has to be enabled so as to get the power enabled.

To reinstate the default setting of datalink decouple configuration, user must configure the **inline power** command on the interface.

The **no** function of the **inline power couple-datalink** command does not restore the default setting but only disables the power on the port.

Examples

The following example couples datalink operations with inline power.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# inline power couple-datalink
```

The following example reinstates the default datalink decouple configuration on an interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# inline power
```

History

Release	Command History
08.0.70b	This command was introduced.
08.0.80	This command was added to FastIron 08.0.80.

inline power install-firmware

Installs Power over Ethernet (PoE) firmware.

Syntax

inline power install-firmware { **all** | **stack-unit** *unit-number* } **tftp** *ip-address file-name*

Parameters

all

Installs Firmware on all PoE units of the system.

stack-unit *unit-number*

Specifies the unit ID of the stack. If the switch is not a part of the stack, the unit number is the default value. The default stack-unit value is 1.

tftp *ip-address*

Specifies the IP address of the TFTP server.

file-name

Specifies the name of the file, including its path name.

Modes

Privileged EXEC mode

Usage Guidelines

In releases prior to 08.0.61, PoE firmware installation could be initiated only on one stack unit at a time.

From 08.0.61 release onwards, PoE firmware installation can also be initiated on all PoE units, or on multiple stack units simultaneously.

Examples

The following example installs PoE firmware on all PoE units.

```
device# inline power install-firmware all tftp 10.120.54.161 icx74xx_poh_01.2.1.b003.fw
```

The following example installs PoE firmware on a stack unit.

```
device# inline power install-firmware stack-unit 1 tftp 10.120.54.161 icx74xx_poh_01.2.1.b003.fw
```

History

Release version	Command history
08.0.61	The command was modified to add the **all** keyword.

inline power install-firmware scp

Upgrades the PoE firmware of a FastIron stacking device by downloading a firmware file from an SCP server.

Syntax

inline power install-firmware { **all** | **stack-unit** *unit-id* } **scp** { *ipv4-address-* | *ipv4-hostname-* | **ipv6** { *ipv6-address-* | *ipv6-hostname-* }
outgoing-interface { **ethernet** *stackid/slot/port* | **ve** *ve-number* } } [**public-key** { **dsa** | **rsa** }] [*remote-port*] *remote-filename*

Parameters

all

Installs Firmware on all PoE units of the system.

stack-unit *unit-id*

Specifies the unit ID of the FastIron device in the stack to copy the PoE firmware. You must specify the stack unit when you configure the **inline power install-firmware** command to upgrade PoE firmware on a stacking device.

module *module-id*

Specifies the module ID of the device to copy the PoE firmware.

ipv4-address-

Specifies the IPV4 address of the SCP server, using 8-bit values in dotted decimal notation.

ipv4-hostname-

Specifies the IP hostname of the SCP server.

ipv6

Specifies the IPV6 address method for SCP file transfer.

ipv6-address-prefix/prefix-length

Specifies the IPV6 address of the SCP server. You must specify this address in hexadecimal using 16-bit values between colons, as documented in RFC 2373.

ipv6-hostname-

Specifies the IPv6 hostname of the SCP server.

outgoing-interface

Specifies the interface to be used to reach the remote host.

ethernet *stackid/slot/port*

Configures an Ethernet interface as the outgoing interface.

ve *ve-number*

Configures a virtual interface (VE) as the outgoing interface.

public-key

Specifies the type of public key authentication to use for the connection, either digital signature algorithm (DSA) or Rivest, Shamir, and Adelman (RSA) . If you do not configure this parameter, the default authentication type is password.

dsa

Specifies DSA as the public key authentication.

rsa

Specifies RSA as the public key authentication.

remote-port
Specifies the remote port number for the TCP connection.

remote-filename
Specifies the name of the file in the SCP server that is to be transferred. You can specify up to 127 characters for the filename.

Modes

Privileged EXEC mode

Usage Guidelines

You are prompted for username and password when you configure this command.

If you do not configure the type of public key authentication, the default authentication type is password.

In releases prior to 08.0.61, PoE firmware installation could be initiated only on one SPX unit or stack unit at a time.

From 08.0.61 release onwards, PoE firmware installation can also be initiated on all PoE units, or on multiple stack or SPX units simultaneously.

You must specify the stack unit and module when you configure the **inline power install-firmware** command to upgrade PoE firmware on a stacking device.

Examples

This example upgrades the PoE firmware of a FastIron device by downloading a firmware file from an SCP server:

```
device# inline power install-firmware stack-unit 2 scp 2.2.2.2 icx64xx_poeplus_02.1.0.b004.fw
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.61	The command was modified to add the **all** keyword.

inline power interface-mode-2pair-pse

Corrects a condition where some non-standard powered devices (PD) are undetected on PoH ports due to difference in allowed capacitance between a 2-pair port and a 4-pair port.

Syntax

inline power interface-mode-2pair-pse

no inline power interface-mode-2pair-pse

Modes

Interface port

Usage Guidelines

This command is applicable for 4pair pse ports of all ICX platforms.

The 4pair ports are moved to AT mode when overdrive is disabled using the **no inline power overdrive** command and port is made 2pair.

Before this command is executed the user may see the following behavior:

```
device(config-if-e2500-1/1/36)# show inl pow 1/1/36

Port   Admin   Oper    ---Power(mWatts)---  PD Type  PD Class     Pri  Fault/
        State   State   Consumed  Allocated                          Error
-------------------------------------------------------------------------
1/1/36 On      Off            0         0   n/a      n/a           3  overload state
```

Examples

When the Operating State is listed as Off, there is no power consumed or allocated, and the PD is not recognized. The following example will correct this problem:

```
device(config-if-e2500-1/1/36)# inline power interface-mode-2pair-pse
device(config-if-e2500-1/1/36)# show inl pow 1/1/36

Port   Admin   Oper    ---Power(mWatts)---  PD Type  PD Class     Pri  Fault/
        State   State   Consumed  Allocated                          Error
-------------------------------------------------------------------------
1/1/36 On      On          8088     28850   2P-IEEE  Class 4       3  n/a
```

When the operating state is listed as Overload with the default configuration, use this command to provide power.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)#inline power interface-mode-2pair-pse
device(config-if-e1000-1/1/1)#write mem
```

History

Release version	Command history
08.0.30	This command was introduced.

inline power non-pd-detection enable

Enables detection for nonpowered endpoints or devices (non-PD).

Syntax

inline power non-pd-detection enable

no inline power non-pd-detection enable

Command Default

By default, non-PD detection is enabled.

Modes

Global configuration mode

Usage Guidelines

A multiport PD must be connected to a single unit and must have a LAG defined for the ports.

By default, this feature is enabled and new devices that connect to the Power over Ethernet (PoE) ports are detected.

When this feature is disabled by using the **no** form of the command, new devices that connect to the PoE ports are not detected.

When this feature is re-enabled after having been disabled, only new devices that connect to the PoE ports are detected. To ensure that all existing non-PDs are detected, you must save the configuration and reload the device or follow the following configuration order.

1. Configure the LAG for multiport PDs.
2. Enable non-PD detection mode.
3. Configure inline power on interfaces.

When the **no** form of the command is used to disable non-PD detection, the existing non-PD state declarations on the ports are not cleared. The state declarations on the ports clear when they are disconnected from the non-PDs or when you save the configuration and reload the device.

Either reload after disabling the mode or disable and then enable inline power on ports that are in a non-PD state.

When a port has detected a non-PD, it generates the following syslog message:

```
PoE: Power disabled on port 1/1/21 because of detection of non-PD.
PD detection will be disabled on port.
```

When a port loses a non-PD (cable disconnected, etc.), it generates the following syslog message:

```
PoE: Port 1/1/21 lost non-PD, so enabling PD detection.
```

Examples

The following example disables non-PD detection.

```
device# configure terminal
device(config)# no inline power non-pd-detection enable
```

The following example enables non-PD detection.

```
device# configure terminal
device(config)# inline power non-pd-detection enable
Warning: Enabling or disabling non-PD detection requires reload or
disable/enable of ports with existing non-PDs.
Warning: Enabling this configuration also has following limitation:
All ports of a multi-port PD must be connected to one unit only so
that a LAG configured does not span more than a single unit.
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
08.0.30f	This command was introduced.
08.0.50	The command was modified; non-PD detection is now enabled by default.

inline power overdrive

Allows Ruckus PDs to negotiate for power greater than 30-watt allocation on PoE+ ports and greater than 60-watt on PoH ports.

Syntax

In Global configuration mode:

inline power ethernet *unit/slot/port* **overdrive**

no inline power ethernet *unit/slot/port* **overdrive**

In Interface configuration mode:

inline power overdrive

no inline power overdrive

Command Default

PoE overdrive is disabled by default; but for Ruckus PDs, PoE overdrive is auto-enabled.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

PoE overdrive on PoE+ ports is available only for Ruckus PDs.

When Ruckus PDs negotiate for power greater than 30-watt allocation on PoE+ ports that support overdrive through LLDP-MED messages, PoE overdrive gets automatically enabled. When the PD that requires overdrive is disconnected, the port mode changes back to non-overdrive mode.

When the port mode dynamically changes to overdrive mode, the PD gets reloaded. To avoid PD reload, manually apply the **inline power overdrive** configuration on the port before connecting the PD.

The maximum power that can be processed based on LLDP-MED negotiation is limited to the hardware capability of the PSE.

Ruckus PDs use uPoE when connected to PoH ports.

The **no** form of the command reduces the power allocation from 95 watts to 60 watts for PoH ports.

Examples

The following example configures PoE overdrive on a specific port in global configuration mode.

```
device#configure terminal
device(config)#inline power ethernet 1/1/1 overdrive
```

The following example configures PoE overdrive on a range of ports in interface configuration mode.

```
device#configure terminal
device(config)#interface ethernet 1/1/1 to 1/1/5
device(config-mif-1/1/1-1/1/5)#inline power overdrive
```

History

Release version	Command history
08.0.61	This command was introduced.
08.0.90	This command was modified to change the PoE default port mode.

inline power poe-ha

Enables perpetual PoE and fast boot PoE on a per-port basis.

inline power poe-ha

Modes

Interface configuration mode

Modes

By default, perpetual PoE and fast boot PoE are disabled in FastIron 08.0.95.

Usage Guidelines

Perpetual PoE and fast boot PoE are two new enhancements that can be configured on ICX 7550 switches to allow brief or no power downtime.

When configured, the PDs will not lose power while reloading and will have a brief power-down time when power-cycled.

Configure the inline power poe-ha command before connecting the PD. If the ports are configured before the PDs are connected, power is supplied to the PDs even while the unit is reloading.

Perpetual PoE provides uninterrupted power to the connected PDs even when the PSE switch is rebooting or reloading.

Fast boot PoE provides power to the powered devices as soon as the PSE switch is turned on without waiting for the system to boot up.

In the PoE restart process, perpetual PoE will be always on irrespective of the configuration. In a system reload case, if the configuration is not saved to the startup configuration, perpetual PoE comes on only with the next reload or power cycle.

Examples

The following example configures perpetual PoE and fast boot PoE on a per-port basis.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# inline power poe-ha
```

History

Release version	Command history
08.0.95	This command was introduced.

integrity

Configures an integrity algorithm for an Internet Key Exchange version 2 (IKEv2) proposal.

Syntax

integrity { **sha256** | **sha384** }

no integrity { **sha256** | **sha384** }

Command Default

The default integrity algorithm is SHA-384.

Parameters

sha256

Specifies SHA-2 family 256-bit (hash message authentication code (HMAC) variant) as the hash algorithm.

sha384

Specifies SHA-2 family 384-bit (HMAC variant) as the hash algorithm.

Modes

IKEv2 proposal configuration mode

Usage Guidelines

Multiple integrity algorithms may be configured for an IKEv2 proposal.

When only one integrity algorithm is configured for an IKEv2 proposal, removing it restores the default configuration.

The **no** form of the command removes the specified integrity algorithm configuration.

Examples

The following example shows how to configure the integrity algorithm SHA-256 for an IKEv2 proposal name ikev2_proposal.

```
device(config)# ikev2 proposal ikev2_proposal
device(config-ikev2-proposal-ikev2_proposal)# integrity sha256
```

History

Release version	Command history
08.0.50	This command was introduced.

interface cpu active

Enters configuration mode for the CPU of the active unit, either the active controller of a stack or a standalone unit.

Syntax

interface cpu active

Modes

Global configuration mode

Examples

The following example enters CPU interface configuration mode for the active controller. It then applies an IPv4 ACL to inbound CPU traffic.

```
device# configure terminal
device(config)# interface cpu active
device(config-if-cpu-active)# ip access-group acl1 in
(config-if-cpu-active)# exit
device(config)#
```

The following example applies an IPv6 ACL to inbound CPU traffic.

```
device# configure terminal
device(config)# interface cpu active
(config-if-cpu-active)# ipv6 access-group aclv61 in
(config-if-cpu-active)# exit
device(config)#
```

History

Release version	Command history
09.0.00	This command was introduced.

interface ethernet

Enters interface configuration mode for the specified Ethernet interface.

Syntax

interface ethernet *stackid/slot/port* [[**ethernet** *stackid/slot/port*]... | **to** *stackid/slot/port*]

no interface ethernet *stackid/slot/port* [[**ethernet** *stackid/slot/port.*]... | **to** *stackid/slot/port*]

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet interface.

to *stackid/slot/port*

Specifies a range of Ethernet interfaces.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

The **no** form of the command exits from the interface configuration mode.

Examples

The following example shows how to enter interface configuration mode.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# interface ethernet 1/1/2
```

The following example shows how to move to one interface mode to another.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# interface ethernet 1/1/2
device(config-if-e1000-1/1/2)#
```

interface group-ve

Associates the virtual interface routing group with a VLAN group.

Syntax

interface group-ve *num*

no interface group-ve *num*

Command Default

A virtual routing interface group is not associated with a VLAN group.

Parameters

num

Specifies the VLAN group ID with which you want to associate the virtual routing interface group.

Modes

Global configuration mode

Usage Guidelines

The VLAN group must already be configured and enabled to use a virtual routing interface group. The software automatically associates the virtual routing interface group with the VLAN group that has the same ID. You can associate a virtual routing interface group only with the VLAN group that has the same ID.

When you configure a virtual routing interface group, all members of the group have the same IP subnet address.

NOTE
Configuring a virtual interface routing group is not supported with IPv6. Configuring a virtual interface routing group is supported only with the OSPF, VRRPv2, and VRRP-Ev2 protocols.

The **no** form of the command removes the virtual routing interface group from a VLAN group.

Examples

The following example shows how to associate the virtual routing interface group with a VLAN group.

```
device(config)# vlan-group 1
device(config-vlan-group-1)# group-router-interface
device(config-vlan-group-1)# exit
device(config)# interface group-ve 1
```

interface lag

Configures LAG virtual interface that represents the entire LAG.

Syntax

interface lag { *lag-interface-id* [**to** *lag-interface-id* | [**lag** *lag-interface-id* **to** *lag-interface-id* | **lag** *lag-interface-id*]...] }

no interface lag { *lag-interface-id* [**to** *lag-interface-id* | [**lag** *lag-interface-id* **to** *lag-interface-id* | **lag** *lag-interface-id*]...] }

Command Default

LAG virtual interface is not configured.

Parameters

lag

Specifies the LAG virtual interface.

lag-interface-id

Specifies a LAG virtual interface ID.

to

Specifies the range of LAG virtual interface IDs

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the configurations on the LAG virtual interface.

Examples

The following example configures LAG virtual interface for a static LAG.

```
device(config)# lag blue static id 11
device(config-lag-blue)# ports ethernet 1/1/1 ethernet 1/1/5
device(config-lag-blue)# exit
device(config)# interface lag 11
device(config-lag-if-lg11)#
```

History

Release version	Command history
08.0.61	This command was introduced.

interface loopback

Configures a loopback interface and enters loopback interface configuration mode.

Syntax

interface loopback *port-number*

interface loopback *port-number*

Command Default

A loopback interface is not configured.

Parameters

port-number

Specifies the port number for the loopback interface. The range is 1 through 32.

Modes

Global configuration mode

Usage Guidelines

A loopback interface adds stability to the network by working around route flap problems that can occur due to unstable links between the device and neighbors.

Loopback interfaces are always up, regardless of the states of physical interfaces.

The **no** form of the command removes the specified loopback interface.

Examples

The following example configures a loopback interface and enters loopback interface configuration mode.

```
device(config)# interface loopback 10
device(config-lbif-3)#
```

interface management

Specifies a management interface and enters management interface configuration mode.

Syntax

interface management { **1** }

no interface management

Command Default

No management interface is specified.

Parameters

1

The only available interface for management.

Modes

Global configuration mode

Usage Guidelines

Use the **no** form of this command to remove the management interface.

Examples

To specify the management interface and enter management interface configuration mode:

```
device# configure terminal
device(config)# interface management 1
device(config-if-mgmt-1)#
```

History

Release version	Command history
08.0.50	This command was introduced.

interface tunnel

Configures a tunnel interface.

Syntax

interface tunnel *tunnel-number*

no interface tunnel *tunnel-number*

Command Default

No tunnel interface is configured.

Parameters

tunnel-number

Specifies the tunnel number.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the tunnel interface.

Examples

The following example creates a tunnel interface.

```
device# configure terminal
device(config)# interface tunnel 2
device(config-tnif-2)#
```

Related Commands

tunnel destination, tunnel mode gre ip, tunnel source

interface ve

Configures a virtual Ethernet (VE) interface.

Syntax

interface ve*vlan-num*

no interface ve*vlan-num*

Command Default

A virtual Ethernet interface is not configured.

Parameters

vlan-num

Specifies the corresponding VLAN interface that must already be configured before the VE interface can be created. Valid values are from 1 through 4095.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

A virtual routing interface is a logical routing interface that RUCKUS Layer 3 Switches use to route Layer 3 protocol traffic between VLANs.

Beginning with 09.0.00 release, when a VLAN is configured, a virtual routing interface is statically mapped to the VLAN ID. However, only when you issue the **interface ve***ve-num* command does the virtual interface get created. You must ensure that the *ve-num* corresponds to the *vlan-id* of the VLAN under which it is configured.

Configure routing parameters on the virtual interface to enable the Layer 3 switch to route protocol traffic from one VLAN to the other, without using an external router.

The no form of the command removes the VE interface.

Examples

The following example designates a virtual interface, enters configuration sub-mode for the interface, and assigns the interface an IP address.

```
device(config)# vlan 200
device(config-vlan-200)# interface ve 200
device(config-vif-200)# ip address 10.10.10.254/24
```

Release version	Command history
09.0.00	The VE-VLAN static mapping was introduced.

ip access-group

Applies IPv4 access control lists (ACLs) to traffic entering or exiting an interface.

Syntax

ip access-group { *acl-name* } { **in** | **out** } [**logging enable**]

no ip access-group {*acl-name* } { **in** | **out** } [**logging enable**]

Command Default

ACLs are not applied to interfaces.

Parameters

acl-name
: Specifies a valid ACL name.

in
: Applies the ACL to inbound traffic on the port.

out
: Applies the ACL to outbound traffic on the port.

[**logging enable**]
: Turns logging on for matched statements in the ACL that also include a **log** action.

Modes

Interface subtype configuration modes

Usage Guidelines

Through a virtual routing interface, you have the following options:

- (Default) Apply an ACL to all ports of the VLAN.
- One or both of the following options:
  - Apply an ACL to specified ports.
  - Apply an ACL to one or more ranges of ports.

To remove an ACL from an interface, use one of the **no** forms of this command.

Examples

The following example creates a named extended IPv4 ACL, defines rules in the ACL, and applies it to inbound traffic on an Ethernet interface. Because the **ip access-group** command in this case includes the **logging enable** option, when the **deny** statement in the ACL is matched (note the **log** option in the statement), it is logged.

```
device# configure terminal
device(config)# ip access-list extended block_telnet
device(config-ext-ipacl-block_telnet)# deny tcp host 10.157.22.26 any eq telnet log
device(config-ext-ipacl-block_telnet)# permit ip any any
device(config-ext-ipacl-block_telnet)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# ip access-group block_telnet in logging enable
```

The following example binds several ACLs, including IPv6, IPv4, and MAC ACLs, to VLAN 555.

```
device# configure terminal
device(config)# vlan 555 by port
device(config-vlan-555)# lag 10
device(config-vlan-555)# interface ve 555
device(config-vlan-555)# ipv6 access-group scale25 in
device(config-vlan-555)# ipv6 access-group scale15 out
device(config-vlan-555)# mac access-group mac_acl1 in
device(config-vlan-555)# ip access-group 123 in
device(config-vlan-555)# ip access-group 134 out
device(config-vlan-555)# exit
device(config)#
```

The following example applies IPv6, IPv4, and MAC ACLs to LAG 10 and enables logging of traffic that matches any statement within the applied ACLs that contains the **log** keyword.

```
device# configure terminal
device(config)# vlan 558 by port
device(config-vlan-558)# lag 10
device(config-vlan-558)# ipv6 access-group scale12 in lag 10 logging enable
device(config-vlan-558)# mac access-group mac_acl in lag 10
device(config-vlan-558)# ip access-group 134 in lag 10 logging enable
```

The following example applies IPv4, IPv6, and MAC ACLs to LAG 10 within the VLAN and enables logging of traffic that matches statements that contain the **log** keyword within the applied ACLs.

```
device# configure terminal
device(config)# vlan 558 by port
device(config-vlan-558)# lag 10
device(config-vlan-558)# ipv6 access-group scale12 in lag 10 logging enable
device(config-vlan-558)# mac access-group mac_acl in lag 10
device(config-vlan-558)# ip access-group 134 in lag 10 logging enable
```

History

Release version	Command history
08.0.95	This command was modified to include the **logging enable** option.

ip access-group frag deny

Allows strict filtering of fragmented packets.

Syntax

ip access-group frag deny

no ip access-group frag deny

Command Default

By default, packet fragments are not dropped.

Modes

interface configuration mode

Usage Guidelines

As soon as you enter the command, the interface begins dropping all received packet fragments. The option is useful if the port is receiving an unusually high rate of fragments, which could indicate a hacker attack.

The command is not supported on LAG interfaces.

The **no** form of the command immediately removes packet filtering for fragments from the interface.

Examples

The following example immediately applies packet fragment filtering to port 1/1/1.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# ip access-group frag deny
```

ip access-list

Creates a named IPv4 standard or extended access control list (ACL) that permits or denies network traffic based on criteria that you specify.

Syntax

ip access-list { **standard** | **extended** } { *acl-name* | *acl-id* }

no ip access-list { **standard** | **extended** } { *acl-name* | *acl-id* }

Command Default

No IPv4 ACLs are defined.

Parameters

standard

Creates a standard access control list. Contains rules that permit or deny traffic based on source addresses that you specify. The rules are applicable to all ports of the specified address.

extended

Contains rules that permit or deny traffic according to source and destination addresses, as well as other parameters. For example, you can also filter by port, protocol (TCP or UDP), and TCP flags.

acl-name

Specifies a unique IPv4 ACL name. The name can be up to 255 characters, and must begin with an alphabetic character. If the name contains spaces, put it within quotation marks. Otherwise, no special characters are allowed, except for underscores and hyphens.

acl-id

Specifies the ACL number for a standard or extended access list. The value can be from 1 through 99 for standard IPv4 ACLs and from 100 through 199 for extended IPv4 ACLs.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command deletes the ACL. You can delete an IPv4 ACL only after you first remove it from all interfaces to which it is applied, using the **no ip access-group** command.

From FastIron release 08.0.80, you cannot create IPv4 ACLs using the **access-list** command. You must use the **ip access-list** command instead.

An ACL name must be unique among IPv4 and IPv6 standard and extended ACL types.

The following points apply to naming ACLs:

- An ACL name must begin with an alphabetical character followed by alphanumeric characters.

- The maximum length of an ACL name is 47 characters.
- An ACL name cannot contain special characters.
- The ACL name cannot be 'test'.

After you create an IPv4 ACL, enter one or more **permit** or **deny** commands to create filtering rules for that ACL.

An IPv4 ACL starts functioning only after it is applied to an interface using the **ip access-group** command.

The system supports the following IPv4 ACL resources:

- IPv4 named standard ACLs: 99
- IPv4 named extended ACLs: 100
- Maximum filter-rules per IPv4 or IPv6 ACL: 2048. You can increase the maximum from 2048 through 8192 using the **system-max ip-filter-sys** command.

The wildcard mask is in dotted-decimal notation (IP address format). It is a four-part value, where each part is 8 bits (one byte) separated by dots, and each bit is a one or a zero. Each part is a number ranging from 0 to 255, for example, 0.0.0.255. Zeros in the mask mean the packet source address must match the source IP address. Ones mean any value matches. For example, the source IP address and wildcard values 10.157.22.26 0.0.0.255 mean that all hosts in the Class C subnet 10.157.22.x match the policy.

If you prefer to specify the wildcard (mask value) in CIDR format, you can enter a forward slash (/) after the IP address and then enter the number of significant bits in the mask. For example, you can enter the CIDR equivalent of 10.157.22.26 0.0.0.255 as 10.157.22.26/24. The CLI automatically converts the CIDR number into the appropriate ACL mask (where zeros instead of ones are the significant bits) and changes the non-significant bits of the IP address into ones. For example, if you specify 10.157.22.26/24 or 10.157.22.26 0.0.0.255 and then save the changes to the startup-config file, the value appears as 10.157.22.0/24 (if you have enabled display of subnet lengths) or 10.157.22.0 0.0.0.255 in the startup-config file.

If you enable the software to display IP subnet masks in CIDR format, the mask is saved in the file in "/mask-bits" format. To enable the software to display the CIDR masks, enter the **ip show-subnet-length** command at the global configuration level of the CLI. You can use the CIDR format to configure the ACL entry regardless of whether the software is configured to display the masks in CIDR format.

In extended IPv4 access-lists, the following protocols can be matched in permit or deny statements:

- esp
- gre
- icmp
- igmp
- ip
- ipv6
- ospf
- pim
- rsvp
- tcp
- udp

In extended IPv4 access-lists, the following TCP/UDP application port names are allowed, in addition to any application-specific port number in decimal format:

- ftp-data
- ftp
- ssh
- telnet

- smtp
- dns
- http
- gppitnp
- pop2
- pop3
- sftp
- sqlserv
- bgp
- ldap
- ssl

Examples

The following example configures a standard ACL.

```
device# configure terminal
device(config)# ip access-list standard acl1
device(config-std-ipacl-acl1)#
```

The following example configures a standard ACL to deny packets from three source IP addresses being received on port 1/1/1. The last rule permits all packets not explicitly denied by the first three ACL entries. (Otherwise, the implicit action is "deny".) In the example, ACL is applied to the port along with the keywords **logging enable**. As a result, all deny actions, which include the keyword **log**, are logged.

```
device# configure terminal
device(config)# ip access-list standard ip_stan_test
device(config-std-ipacl-ip_stan_test)# deny host 10.157.22.26 log
device(config-std-ipacl-ip_stan_test)# deny 10.157.29.12 log
device(config-std-ipacl-ip_stan_test)# deny host IPHost1 log
device(config-std-ipacl-ip_stan_test)# permit any
device(config-std-ipacl-ip_stan_test)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip access-group ip_stan_test in logging enable
device(config-if-e1000-1/1/1)# exit
device(config)#
```

The following example deletes an IPv4 ACL.

```
device# configure terminal
device(config)# no ip access-list standard acl1
```

The following example creates an extended ACL and enters ACL configuration sub-mode, where filters can be defined.

```
device# configure terminal
device(config)# ip access-list extended acl125
device(config-ext-ipacl-acl125)#
```

The following example creates an extended, named IPv4 ACL and defines rules for it.

```
device# configure terminal
device(config)# ip access-list extended acl101
device(config-ext-ipacl-acl101)# deny udp 19.1.2.0 0.0.0.255 eq 2023 20.1.2.0 0.0.0.255 eq 2025 dscp-
mapping 23
device(config-ext-ipacl-acl101)# permit 12 host 098.096.31.10 any
device(config-ext-ipacl-acl101)# deny tcp  host 098.092.12.10 131.21.12.0/24 syn
device(config-ext-ipacl-acl101)# deny 120  host 18.192.112.110 13.2.2.0/24 log
device(config-ext-ipacl-acl101)# permit ip any any
```

The following example creates an extended, named IPv4 ACL, defines rules in it, and applies it to inbound traffic on an Ethernet interface.

```
device(config)# ip access-list extended blocktelnet
device(config-ext-ipacl-blocktelnet)# deny tcp host 10.157.22.26 any eq telnet
device(config-ext-ipacl-blocktelnet)# permit ip any any
device(config-ext-ipacl-blocktelnet)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# ip access-group blocktelnet in
```

The following example creates an IP extended ACL that includes remarks preceding each rule.

```
device# configure terminal
device(config)# ip access-list extended acl22
device(config-ext-ipacl-acl22)# remark Permits ICMP traffic from 10.157.22.x to 10.157.21.x:
device(config-ext-ipacl-acl22)# permit icmp 10.157.22.0/24 10.157.21.0/24
device(config-ext-ipacl-acl22)# remark Denies IGMP traffic from "rkwong" to 10.157.21.x:
device(config-ext-ipacl-acl22)# deny igmp host rkwong 10.157.21.0/24 log
device(config-ext-ipacl-acl22)# remark Denies IGRP traffic from "rkwong" to 10.157.21.x:
device(config-ext-ipacl-acl22)# deny igrp 10.157.21.0/24 host rkwong log
device(config-ext-ipacl-acl22)# remark Denies IPv4 traffic from 10.157.21.100 to 10.157.22.1, with
logging:
device(config-ext-ipacl-acl22)# deny ip host 10.157.21.100 host 10.157.22.1 log
device(config-ext-ipacl-acl22)# remark Denies all OSPF traffic, with logging:
device(config-ext-ipacl-acl22)# deny ospf any any log
device(config-ext-ipacl-acl22)# remark Permits traffic not explicitly denied by the previous rules:
device(config-ext-ipacl-acl22)# permit ip any any
```

History

Release version	Command history
08.0.95	This command was modified to use names no longer than 47 characters and to remove explicit sequence number requirements.

ip address

Configures an IP address on an interface.

Syntax

ip address *ip-address/mask* [**dynamic** | **ospf-ignore** | **ospf-passive**] [**replace**]

ip address { *ip-address mask* | *ip-address/mask* } [**secondary**]

no ip address { *ip-address mask* | *ip-address/mask* } [**secondary**] [**dynamic** | **ospf-ignore** | **ospf-passive**] [**replace**]

no ip address [*]

Parameters

ip-address
: Specifies the IP address.

mask
: IP address or subnet mask length. The subnet mask can be in dotted decimal notation or in CIDR notation. For CIDR, enter a forward slash (/) between the ip address and the mask.

dynamic
: Specifies the interface IP address is dynamic.

ospf-ignore
: Disables adjacency formation with OSPF neighbors and disables advertisement of the interface to OSPF.

ospf-passive
: Disables adjacency formation with OSPF neighbors but does not disable advertisement of the interface to OSPF.

replace
: Replaces the configured primary IP address on the interface.

secondary
: Specifies that the configured address is a secondary IP address. If this keyword is omitted, the configured address is the primary IP address.

*
: Specifies all configured IP addresses.

Modes

Interface configuration mode

Management interface configuration mode

Usage Guidelines

- Use this command to configure a primary or secondary IP address for a specific interface.
- You can also use this command to prevent OSPF from running on specified subnets. Multiple primary IP addresses are supported on an interface.

- You can use this command to configure a primary or secondary IP address for a management interface.
- For a management interface, only one primary IP address is supported. Secondary IP addresses are not supported.
- A primary IP address cannot overlap with a previously configured IP subnet.
- A primary IP address must be configured before you configure a secondary IP address in the same subnet.
- To remove the configured static or DHCP address, enter **no ip address**. This resets the address to 0.0.0.0/0.
- The **no** form of the command removes a specific IP address from the interface.
- The * option to represent all IP addresses is only supported for the **no** form of the command.

Examples

The following example configures a primary IP address on a specified Ethernet interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip address 10.1.1.1 255.255.255.0
```

The following example configures a primary IP address on a specified Ethernet interface using CIDR format.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/1/1)# ip address 10.1.1.1/24
```

The following example replaces the primary IP address of an interface.

```
device# configure terminal
device (config)# interface ethernet 1/1/21
device(config-if-e1000-1/1/21)# ip address 10.1.1.2/24 replace
```

The following example removes all the configured IP addresses on an interface.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/1/1)# no ip address *
```

ip-address

Configures a virtual IP address for a Virtual Router Redundancy Protocol (VRRP) or VRRP Extended (VRRP-E) instance.

Syntax

ip-address *ip-address*

no ip-address *ip-address*

Command Default

A virtual IP address is not configured for a VRRP or VRRP-E instance.

Parameters

ip-address

Configures the IP address, in dotted-decimal format.

Modes

VRID interface configuration mode

Usage Guidelines

For VRRP instances, the IP address used for the virtual router must be configured on the device assigned to be the initial VRRP owner device. The same IP address cannot be used on any other VRRP device.

For VRRP-E instances, the IP address used for the virtual router must not be configured on any other device.

The **no** form of this command removes the virtual router IP address.

Examples

The following example configures a virtual IP address for VRID 1 when VRRP is implemented. In this example, the device is configured as the VRRP owner device.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.5.1
device(config-if-e1000-1/1/6-vrid-1)# activate
VRRP router 1 for this interface is activating
```

The following example configures a virtual IP address for VRID 2 when VRRP-E is implemented. In this example, the device is configured as a VRRP backup device and the highest priority device will become the master VRRP device.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.5.3/24
device(config-if-e1000-1/1/5)# ip vrrp-extended vrid 2
device(config-if-e1000-1/1/5-vrid-2)# backup priority 110
device(config-if-e1000-1/1/5-vrid-2)# version 2
device(config-if-e1000-1/1/5-vrid-2)# ip-address 10.53.5.254
device(config-if-e1000-1/1/5-vrid-2)# activate
VRRP router 2 for this interface is activating
```

ip-address (VSRP)

Configures the IP address to back up.

Syntax

ip-address *ip-address*

no ip-address *ip-address*

ip address *ip-address*

no ip address *ip-address*

Command Default

The IP address to backup is not configured.

Parameters

ip-address

Configures the IP address to back up.

Modes

VSRP VRID configuration mode

Usage Guidelines

If you are configuring a Layer 3 switch for VSRP, you can specify an IP address to back up. When you specify an IP address, VSRP provides redundancy for the address. This is useful if you want to back up the gateway address used by hosts attached to the VSRP backups. VSRP does not require you to specify an IP address. If you do not specify an IP address, VSRP provides Layer 2 redundancy. If you do specify an IP address, VSRP provides Layer 2 and Layer 3 redundancy.

The VRID IP address must be in the same subnet as a real IP address configured on the VSRP interface, but cannot be the same as a real IP address configured on the interface.

Failover applies to both Layer 2 and Layer 3.

The **no** form of the command removes the configured backup IP address.

Examples

The following example configures the backup IP address.

```
device(config)# vlan 200
device(config-vlan-200)# tagged ethernet 1/1/1 to 1/1/8
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# ip-address 10.10.10.1
```

ip arp inspection syslog disable

Disables the syslog messages for Dynamic ARP Inspection.

Syntax

ip arp inspection syslog disable

no ip arp inspection syslog disable

Command Default

Syslog messages are enabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command re-enables syslog messages for Dynamic ARP Inspection.

Examples

The following example disables the syslog messages for dynamic ARP inspection.

```
device(config)# ip arp inspection syslog disable
```

History

Release version	Command history
08.0.30b	This command was introduced.

ip arp inspection validate

Enables validation of the ARP packet destination MAC, ARP Packet IP, and source MAC addresses.

Syntax

ip arp inspection validate [**dst-mac**| **ip** | **src-mac**]

Command Default

IP ARP packet destination address validation is disabled.

Parameters

dst-mac

Checks the destination MAC address in the Ethernet header against the target MAC address in the ARP body for ARP responses. When enabled, packets with different MAC addresses are classified as invalid and are dropped.

ip

Checks the ARP body for invalid and unexpected IP addresses. Addresses include 0.0.0.0, 255.255.255.255, and all IP multicast addresses. Sender IP addresses are checked in all ARP requests and responses, and target IP addresses are checked only in ARP responses.

src-mac

Checks the source MAC address in the Ethernet header against the sender MAC address in the ARP body for ARP requests and responses. When enabled, packets with different MAC addresses are classified as invalid and are dropped.

Modes

Global configuration mode

Usage Guidelines

You can enable validation of ARP packet destination addresses for a single destination address or for all destination addresses.

You must execute the command once for each type of ARP packet destination address you want to validate.

Examples

The following example enables validation of the MAC, ARP Packet IP, and source MAC ARP packet destination addresses.

```
device(config)# configure terminal
device(config)# ip arp inspection validate dst-mac
device(config)# ip arp inspection validate src-mac
device(config)# ip arp inspection validate ip
```

History

Release version	Command history
08.0.10a	This command was introduced.

ip arp inspection vlan

Enables dynamic ARP inspection (DAI) on a VLAN or a range of VLANs.

Syntax

ip arp inspection vlan *vlan-id* [**to** *vlan-id* ...]

no ip arp inspection vlan *vlan-id* [**to** *vlan-id* ...]

Command Default

Dynamic ARP inspection is disabled by default.

Parameters

vlan-id

Specifies the VLAN number.

to *vlan-id*

Specifies a range of VLANs.

Modes

Global configuration mode

Usage Guidelines

All VLANs included in the range when using the **to** keyword must be valid VLANs. Otherwise an error will occur.

DAI can be configured on a maximum of 511 VLANs..

The **no** form of the command disables DAI on the VLAN.

Examples

The following example enables DAI on VLAN 2.

```
device# configure terminal
device(config)# ip arp inspection vlan 2
```

The following example enables DAI on VLANs 100 through 150, VLAN 160, and VLANs 170 through 200.

```
device# configure terminal
device(config)# ip arp inspection vlan 100 to 150 160 170 to 200
```

History

Release version	Command history
08.0.80	The **to** keyword was added to enable Dynamic ARP Inspection on a range of VLANs by using a single command.
08.0.95	DAI can be configured on a maximum of 511 VLANs.

ip arp learn-gratuitous-arp

Enables learning gratuitous ARP.

Syntax

ip arp learn-gratuitous-arp

no ip arp learn-gratuitous-arp

Command Default

Learning gratuitous ARP is not enabled.

Modes

Global configuration mode

Usage Guidelines

Learning gratuitous ARP enables Layer 3 devices to learn ARP entries from incoming gratuitous ARP packets from the hosts which are directly connected. This help achieve faster convergence for the hosts when they are ready to send traffic.

A new ARP entry is created when a gratuitous ARP packet is received. If the ARP is already existing, it will be updated with the new content.

The **no** form of the command disables learning gratuitous ARP.

Examples

The following example enables learning gratuitous ARP.

```
device(config)# ip arp learn-gratuitous-arp
```

ip arp port-move-syslog

Disables or re-enables Address Resolution Protocol (ARP) port movement syslog message generation.

Syntax

ip arp port-move-syslog

no ip arp port-move-syslog

Command Default

Syslog message is generated with every port movement for ARP entries by default.

Modes

Global configuration mode

Usage Guidelines

Whenever a port, on which a MAC address for an ARP is learned, is moved to a different port, a syslog message is generated by default. This may cause flooding of the syslog server or console with syslog messages in certain deployments where next hop or ARP port movement occurs continuously. In such scenarios, the default behavior can be disabled and syslog messages can be prevented from being generated with every port movement for ARP entries using the **no ip arp port-move-syslog** command.

The **no** form of the command disables ARP port movement syslog generation.

Examples

The following example disables ARP port movement syslog message generation.

```
device(config)# no ip arp port-move-syslog
```

History

Release	Command History
08.0.70	This command was introduced.

ip arp-age

Configures ARP aging parameter.

Syntax

ip arp-age *age-time*

no ip arp-age *age-time*

Command Default

The default ARP aging is 10 minutes.

Parameters

age-time

Specifies the ARP age time in minutes. Valid range is from 0 to 240, 0 disables aging. The default is 10 minutes.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

When the Layer 3 switch places an entry in the ARP cache, the Layer 3 switch also starts an aging timer for the entry. The aging timer ensures that the ARP cache does not retain learned entries that are no longer valid. An entry can become invalid when the device with the MAC address of the entry is no longer on the network.

The ARP age affects dynamic (learned) entries only, not static entries. The default ARP age is ten minutes. On Layer 3 switches, you can change the ARP age to a value from 0 through 240 minutes. You cannot change the ARP age on Layer 2 switches. If you set the ARP age to zero, aging is disabled and entries do not age out.

Use the command from interface configuration mode to override the globally configured IP ARP age on an individual interface.

The **no** form of the command resets the ARP aging to the default value of 10 minutes.

Examples

The following example configures the ARP aging time as 100 minutes.

```
device(config)# ip arp-age 100
```

The following example overrides the global ARP aging time on a particular interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip arp-age 30
```

ip bootp-use-intf-ip

Configures a Dynamic Host Configuration Protocol (DHCP) relay agent to set the source IP address of a DHCP-client packet with the IP address of the interface in which the DHCP-client packet is received.

Syntax

ip bootp-use-intf-ip

no ip bootp-use-intf-ip

Command Default

The DHCP relay agent sets the source IP address of a DHCP-client packet with the IP address of the outgoing interface to the DHCP server.

Modes

Global configuration mode

Usage Guidelines

You can configure ACLs on a DHCP server to permit or block access to the DHCP server from particular subnets or networks. You can then use this command on the DHCP relay agent to reveal the source subnet or network of a DHCP packet to the DHCP server, which enables the DHCP server to process or discard the DHCP traffic according to the configured ACLs.

The **no** form of the command restores the default behavior. The DHCP relay agent sets the source IP address of a DHCP-client packet with the IP address of the outgoing interface to the DHCP server.

Examples

The following example configures a FastIron DHCP relay agent so that it sets the source IP address of a DHCP-client packet with the IP address of the interface on which the DHCP-client packet is received.

```
device(config)# ip bootp-use-intf-ip
```

ip broadcast-zero

Enables the Layer 3 switch for zero-based IP subnet broadcasts in addition to ones-based IP subnet broadcasts.

Syntax

ip broadcast-zero

no ip broadcast-zero

Command Default

By default, the Layer 3 switch treats IP packets with all ones in the host portion of the address as IP broadcast packets.

Modes

Global configuration mode

Usage Guidelines

Most IP hosts are configured to receive IP subnet broadcast packets with all ones in the host portion of the address. However, some older IP hosts instead expect IP subnet broadcast packets that have all zeros instead of all ones in the host portion of the address. To accommodate this type of host, you can enable the Layer 3 switch to treat IP packets with all zeros in the host portion of the destination IP address as broadcast packets.

When you enable the Layer 3 switch for zero-based subnet broadcasts, the Layer 3 switch still treats IP packets with all ones the host portion as IP subnet broadcasts too. Thus, the Layer 3 switch can be configured to support all ones only (the default) or all ones and all zeroes.

NOTE
This feature applies only to IP subnet broadcasts, not to local network broadcasts. The local network broadcast address is still expected to be all ones.

You must save the configuration and reload the software to place this configuration change into effect.

The **no** form of the command disablesthe Layer 3 switch for zero-based IP subnet broadcasts in addition to ones-based IP subnet broadcasts.

Examples

The following example enables the Layer 3 switch for zero-based IP subnet broadcasts in addition to ones-based IP subnet broadcasts.

```
device(config)# ip broadcast-zero
device(config)# write memory
device(config)# end
device# reload
```

ip default-network

Configures a default network route.

Syntax

ip default-network *ip-address ip-mask*

no ip default-network *ip-address ip-mask*

Command Default

The default network is not configured.

Parameters

ip-address ip-mask

Specifies the IP address of the network followed by the network mask.

Modes

Global configuration mode

Usage Guidelines

The Layer 3 switch enables you to specify a candidate default route without the need to specify the next hop gateway. If the IP route table does not contain an explicit default route (for example, 0.0.0.0/0) or propagate an explicit default route through routing protocols, the software can use the default network route as a default route instead.

When the software uses the default network route, it also uses the default network route's next hop gateway as the gateway of last resort. Configuring the default network route is especially useful in environments where network topology changes can make the next hop gateway unreachable.

You can configure up to four default network routes.

The **no** form of the command removes the default network route.

Examples

The following example configures a default IP network route.

```
device# configure terminal
device(config)# ip default-network 10.157.22.0/64
device(config)# write memory
```

ip dhcp-client auto-update enable

Enables the DHCP auto-update functionality.

Syntax

ip dhcp-client auto-update enable

no ip dhcp-client auto-update enable

Command Default

DHCP client auto-update is enabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables DHCP auto-update.

Examples

The following example re-enables auto-update.

```
device(config)# ip dhcp-client auto-update enable
```

ip dhcp-client enable

Enables DHCP client auto-update.

Syntax

ip dhcp-client enable

no ip dhcp-client enable

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

You can enable this command on a switch in global configuration mode. On routers, you can enable this command in interface configuration mode.

The **no** form of the command is not supported for Virtual Ethernet (VE) interfaces.

The **no** form of the command disables the DHCP client.

Examples

The following example enables the DHCP client for a switch.

```
device# configure terminal
device(config)# ip dhcp-client enable
```

The following example enables the DHCP client for a router.

```
device# configure terminal
device# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip dhcp-client enable
```

On a router, enter the **ip dhcp-client enable** command to re-enable the DHCP client.

```
device(config-if-ve1)# ip dhcp-client enable
```

History

Release version	Command history
08.0.61	Example for enabling DHCP client on VE was added.
09.0.00	The **no** form of the command is not supported for VE interfaces.

ip dhcp-client ve

Enables the DHCP client for a specific Virtual Ethernet (VE) port.

Syntax

ip dhcp-client ve{**default** | *vlan-num* }

no ip dhcp-client ve {**default** | *vlan-num* }

Command Default

The DHCP client is enabled on the default VE port. A default VE port is created during startup, and added to the running configuration.

Parameters

default

Specifies the DHCP Client on a VE port associated with the default VLAN.

vlan-num

Specifies a VE port.

Modes

Global configuration mode

Usage Guidelines

he DHCP client can only be configured for one specific VE port, either default or non-default, at a time. A default VE port is created during startup, and added to the running configuration. This command is applicable to a VE port. Both tagged and untagged ports can be part of this Vlan.

Use the **no ip dhcp-client ve default** command to enable dhcp client on a non default VE. If there is any dynamic IP address assigned to the default VE, it is released.

The **no** form of the command disables the DHCP client for a specific VE interface and restores the default.

NOTE

The **no** form cannot be used when DHCP client is enabled globally for VE default.

Examples

The following example enables the DHCP client for a specific VE port, either default or non-default.

```
device# configure terminal
device(config)# ip dhcp-client ve 22
```

The following example enables the DHCP Client on a VE interface associated with the default VLAN.

```
device# configure terminal
device(config)# ip dhcp-client ve default
```

History

Release version	Command history
08.0.95	This command was introduced.
09.0.00	This command was modified so that the **default** keyword was added.
09.0.00a, 09.0.10	A note was added regarding the usage of **no** form of the command.

ip dhcp relay information policy

Configures the Dynamic Host Configuration Protocol (DHCP) relay information policy.

Syntax

ip dhcp relay information policy [**drop** | **keep** | **replace**]

Command Default

The device replaces the information with its own relay agent information.

Parameters

drop

Configures the device to discard messages containing relay agent information.

keep

Configures the device to keep the existing relay agent information.

replace

Configures the device to overwrite the relay agent information with the information in the configuration.

Modes

Global configuration mode

Usage Guidelines

When the device receives a DHCP message that contains relay agent information, if desired, you can configure the device to keep the information instead of replacing it, or to drop (discard) messages that contain relay agent information.

Examples

The following example configures the device to keep the relay agent information contained in a DHCP message.

```
device# configure terminal
device(config)# ip dhcp relay information policy keep
```

The following example configures the device to drop DHCP packets with existing relay agent information.

```
device# configure terminal
device(config)# ip dhcp relay information policy drop
```

ip dhcp-server enable

Enables the DHCP server.

Syntax

ip dhcp-server enable

no ip dhcp-server enable

Command Default

The DHCP server is not enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command disables the DHCP server.

Examples

The following example enables the DHCP server.

```
device(config)# ip dhcp-server enable
```

ip dhcp-server mgmt

Enables or disables the DHCP server on the management port.

Syntax

ip dhcp-server mgmt

no ip dhcp-server mgmt

Command Default

DHCP server management is enabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the DHCP server on the management port.

When disabled, DHCP client requests that are received on the management port are discarded.

Examples

The following example enables the DHCP server on the management port.

```
device(config)# ip dhcp-server mgmt
```

The following example disables the DHCP server on the management port.

```
device(config)# no ip dhcp-server mgmt
```

ip dhcp-server pool

Creates a DHCP server address pool.

Syntax

ip dhcp-server pool*name*

no ip dhcp-server pool*name*

Parameters

name

The name of the address pool.

Modes

Global configuration mode

Usage Guidelines

Before using this command, you must configure the subnet network and mask of the DHCP address pool. Refer to the **network (DHCP)** command for more information.

The **no** form of this command disables the address pool. Use this command to switch to pool configuration mode (config-dhcp-name# prompt) and create an address pool.

Examples

The following example creates a DHCP address pool.

```
device(config)# ip dhcp-server pool cabo
```

Related Commands

network (DHCP)

ip dhcp-server server-identifier

Specifies the IP address of the selected DHCP server.

Syntax

ip dhcp-server server-identifier *ip-address*

Parameters

ip-address

Specifies the IP address of the DHCP server.

Modes

Global configuration mode

Examples

The following example shows assigning an IP address to the selected DHCP server.

```
device(config)# ip dhcp-server-identifier 10.1.1.144
```

ip dhcp snooping relay information disable

Enables DHCP snooping relay information (DHCP option 82) on a specified VLAN, a range of VLANs, or for all VLANs.

Syntax

ip dhcp snooping relay information disable [**vlan** *vlan-id* [**to** *vlan-id* ...]]

no ip dhcp snooping relay information disable [**vlan** *vlan-id* [**to** *vlan-id* ...]]

Command Default

DHCP option 82 is enabled by default when DHCP snooping is enabled.

Parameters

vlan *vlan-id*

Specifies a VLAN.

to *vlan-id*

Specifies a range of VLANs.

Modes

Global configuration mode

Usage Guidelines

When DHCP snooping is enabled using the **ip dhcp snooping vlan** command, DHCP option 82 is automatically enabled. If multiple interfaces are part of a VLAN, DHCP option 82 can be disabled, or re-enabled, for all ports of the VLAN using this command. DHCP option 82 can also be disabled or re-enabled for all VLANs in a switch using this command.

The **no** form of the command re-enables DHCP option 82 on a specified VLAN or for all VLANs.

Examples

The following example disables DHCP option 82 globally for all ports and VLANs so that it is not enabled when DHCP snooping is configured for VLAN 100.

```
device# configure terminal
device(config)# ip dhcp snooping relay information disable
device(config)# ip dhcp snooping vlan 100
```

The following example disables DHCP option 82 globally and re-enables it for interface Ethernet 1/1/1.

```
device# configure terminal
device(config)# ip dhcp snooping relay information disable
device(config)# ip dhcp snooping vlan 100
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# dhcp snooping relay information
```

The following example disables DHCP option 82 globally and enables DHCP snooping for VLANs 100 through 300. DHCP option 82 is then enabled on all ports for VLAN 100.

```
device# configure terminal
device(config)# ip dhcp snooping relay information disable
device(config)# ip dhcp snooping vlan 100 to 300
device(config)# no ip dhcp snooping relay information disable vlan 100
```

The following example disables DHCP option 82 for VLAN 100. DHCP option 82 is automatically configured for VLANs 200 and 300 when DHCP snooping is enabled.

```
device# configure terminal
device(config)# ip dhcp snooping vlan 100 to 300
device(config)# ip dhcp snooping relay information disable vlan 100
```

The following example disables DHCP option 82 globally for all VLANs and ports.

```
device# configure terminal
device(config)# ip dhcp snooping vlan 100 to 300
device(config)# ip dhcp snooping relay information disable
Warning - DHCP snooping relay information will be disabled on all port(s) & VLAN(s). You can enable it
on individual ports/VLAN(s)
```

The following example disables DHCP option 82 globally for all ports and VLANs and re-enables it for VLAN 100.

```
device# configure terminal
device(config)# ip dhcp snooping vlan 100 to 500
device(config)# ip dhcp snooping relay information disable
Warning - DHCP snooping relay information will be disabled on all port(s) & VLAN(s). You can enable it
on individual ports/VLAN(s)
device(config)# no ip dhcp snooping relay information disable vlan 100
```

The following example disables DHCP option 82 for a specified range of VLANs.

```
device# configure terminal
device(config)# ip dhcp snooping relay information disable vlan 11 to 15
```

History

Release version	Command history
08.0.80	This command was introduced.
08.0.95	The **to** keyword was added to enable DHCP snooping relay information for a range of VLANS.

ip dhcp snooping verify mac-address

Blocks the malformed DHCP packet by validating the Layer 2 source MAC of the DHCP packet against the client hardware address of the DHCP header.

Syntax

ip dhcp snooping verify mac-address

no ip dhcp snooping verify mac-address

Command Default

DHCP snooping MAC address verification is disabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables DHCP snooping MAC address verification.

Examples

The following example blocks the malformed DHCP packet.

```
device(config)# ip dhcp snooping verify mac-address
```

History

Release Version	Command History
09.0.10	This command was introduced.

ip dhcp snooping vlan

Enables DHCP snooping on a VLAN or a range of VLANs.

Syntax

ip dhcp snooping vlan *vlan-id* [**to** *vlan-id* ...]

no ip dhcp snooping vlan *vlan-id* [**to** *vlan-id* ...]

Command Default

DHCP snooping is disabled by default.

Parameters

vlan-id

Specifies the ID of a configured client or DHCP server VLAN.

to *vlan-id*

Specifies a range of VLANs.

Modes

Global configuration mode

Usage Guidelines

When DHCP snooping is enabled on a VLAN, DHCP packets are inspected. DHCP snooping must be enabled on the client and the DHCP server VLANs.

DHCP Snooping can be configured for a VLAN or VLANS even before the VLAN or VLANS are created. VLANs and DHCP Snooping configurations on the VLANS are not automatically deleted when the VLAN is deleted.

When configuring DHCP snooping on a range of VLANs or multi-VLAN, there cannot not be any VLAN in the range that is a member of a VLAN group or any reserved VLAN. Otherwise, configurations fail on the entire range.

DHCP snooping can be configured on a maximum of 511 VLANs.

DHCP snooping cannot be enabled for a VLAN that is a member of a VLAN group.

The **no** form of the command disables DHCP snooping on the specified VLAN or a range of VLANs.

Examples

The following example enables DHCP snooping on VLAN 2.

```
device# configure terminal
device(config)# ip dhcp snooping vlan 2
```

The following example configures VLANs 100 through 150, VLAN 160, and VLANs 170 through 200 and enables DHCP snooping on all of the configured VLANs.

```
device# configure terminal
device(config)# vlan 100 to 150
device(config-mvlan-100-150)# tagged ethernet 1/1/12
device(config-mvlan-100-150)# exit
device(config)# vlan 151 to 200
device(config-mvlan-151-200)# tagged ethernet 1/1/12
device(config-mvlan-100-150)# exit
device(config)# ip dhcp snooping vlan 100 to 150 160 170 to 200
```

History

Release version	Command history
08.0.80	The **to** keyword was added to enable DHCP snooping on a range of VLANs by using a single command.
08.0.95	This command was modified to limit DHCP snooping configurations to a maximum of 511 VLANs.

ip directed-broadcast

Enables directed broadcast forwarding.

Syntax

ip directed-broadcast

no ip directed-broadcast

Command Default

Directed broadcast forwarding is disabled by default.

Modes

Global configuration mode

Usage Guidelines

NOTE
This command is not supported on RUCKUS ICX 8200 devices.

A Smurf attack relies on the intermediary to broadcast ICMP echo request packets to hosts on a target subnet. When the ICMP echo request packet arrives at the target subnet, it is converted to a Layer 2 broadcast and sent to the connected hosts. This conversion takes place only when directed broadcast forwarding is enabled on the device. To avoid being an intermediary in a Smurf attack, make sure forwarding of directed broadcasts is disabled on the device.

The **no** form of the command disables directed broadcast forwarding.

Examples

The following example enables directed broadcast forwarding.

```
device(config)# ip directed-broadcast
```

ip dns

Configures the IPv4 Domain Name System (DNS).

Syntax

ip dns { **domain-list** *domain-name* | **server-address** *ip-address* [*ip-address*...] }

no ip dns { **domain-list** *domain-name* | **server-address** *ip-address* [*ip-address*...] }

Command Default

IP DNS is not configured.

Parameters

domain-list
Configures a list of DNS domains.

domain-name
The domain name.

server-address
Configures the DNS server IPv4 address.

ip-address
The IPv4 address of the DNS server. You can configure up to a maximum of four IP addresses separated by a space.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the DNS configurations.

Examples

The following example shows how to configure an IPv4 address for a DNS server.

```
device(config)# ip dns server-address 192.168.10.1 192.168.100.1
```

The following example shows how to configure the DNS domain-list.

```
device(config)# ip dns domain-list company.com
```

ip dscp-remark

Enables remarking of the differentiated services code point (DSCP) field for all IPv4 packets.

Syntax

ip dscp-remark *dscp-value*

no ip dscp-remark *dscp-value*

Command Default

DSCP remarking is disabled.

Parameters

dscp-value

Specifies the DSCP value ranges you are remarking.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command disables DSCP remarking.

In interface configuration mode, the command enables DSCP remarking for the given port. The configuration can be done on a physical port, LAG, and VE port.

Examples

The following example enables DSCP remarking on all IPv4 packets received on a specific port when the DSCP bit value is 50:

```
Device(config)# interface ethernet1/1/1
Device(config-if-e1000-1/1/1)# ip dscp-remark 50
```

History

Release version	Command history
08.0.95	This command was modified to remove global configuration.

ip encapsulation

Changes the IP encapsulation type.

Syntax

ip encapsulation { **ethernet-2** | **snap** }

no ip encapsulation { **ethernet-2** | **snap** }

Command Default

Layer 3 switches use Ethernet II by default.

Parameters

ethernet-2

Configures the IP encapsulation type as Ethernet II.

snap

Configures the IP encapsulation type as Ethernet SNAP (also called IEEE 802.3).

Modes

Interface configuration mode

Usage Guidelines

The Layer 3 switch encapsulates IP packets into Layer 2 packets, to send the IP packets on the network.

All IP devices on an Ethernet network must use the same format. Layer 3 switches use Ethernet II by default. All devices connected to the Layer 3 switch port must use the same encapsulation type.

The **no** form of the command resets the encapsulation type as Ethernet II.

Examples

The following example configures the IP encapsulation type as Ethernet SNAP.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip encapsulation snap
```

ip follow ve

Configures a virtual routing interface to share the IP address with other virtual routing interfaces.

Syntax

ip follow ve*number*

no ip follow ve*number*

Command Default

A virtual routing interface does not share its IP address with other interfaces.

Parameters

number

Specifies the virtual routing interface number.

Modes

Virtual routing configuration mode

Usage Guidelines

When this command is configured, one virtual routing interface is configured with an IP address, while the other virtual routing interfaces are configured to use that IP address, thus, they "follow" the virtual routing interface that has the IP address. This is helpful in conserving IP address space.

When configuring IP Follow, the primary virtual routing interface should not have ACL or DoS Protection configured. It is recommended that you create a dummy virtual routing interface as the primary and use the IP-follow virtual routing interface for the network. Global Policy Based Routing is not supported when IP Follow is configured. IPv6 is not supported with IP Follow. FastIron devices support IP Follow with OSPF and VRRP protocols only.

The **no** form of the command removes the configuration.

Examples

The following example configures IP Follow.

```
device(config)# vlan 2 name IP-Subnet_10.1.2.0/24
device(config-vlan-2)# untag ethernet 1 to 4
device(config-vlan-2)# interface ve 2
device(config-vif-2)# ip address 10.10.2.1/24
device(config-vif-2)# interface ve 3
device(config-vif-3)# ip follow ve 2
device(config-vif-3)# interface ve 4
device(config-vif-4)# ip follow ve 2
```

ip forward-protocol udp

Configures the Layer 3 switch to forward client requests for UDP applications.

Syntax

ip forward-protocol udp { *port-name* | *port-num* }

ip forward-protocol udp { *port-name* | *port-num* } *ip-address*

no ip forward-protocol udp { *port-name* | *port-num* }

no ip forward-protocol udp { *port-name* | *port-num* } *ip-address*

Command Default

Layer 3 switch does not forward client requests for UDP applications.

Parameters

port-name

Specifies the UDP application name. The values can be **echo**, **discard**, **time**, **tacacs**, **dns**, **bootps**, **bootpc**, **tftp**, **ntp**, **netbios-ns**, **netbios-dgm**, **mobile-ip**, and **talk**.

port-num

Specifies the UDP application port number.

ip-address

Specifies an IP address.

Modes

Global configuration mode

Interface subtype configuration mode

Usage Guidelines

You also must configure a helper address on the interface that is connected to the clients for the application. The Layer 3 switch cannot forward the requests unless you configure the helper address

This command disables forwarding of SNMP requests to the helper addresses configured on Layer 3 switch interfaces.

The *ip-address* option is only available in Interface subtype configuration mode.

The **no** form of the command stops forwarding client requests for the UDP applications.

Examples

The following example enables the forwarding of NTP broadcasts.

```
device# configure terminal
device(config)# ip forward-protocol udp ntp
```

The following example enables the forwarding of DNS broadcasts and specifies an IP subnet broadcast address.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip forward-protocol udp dns 10.1.1.255
```

History

Release version	Command history
08.0.90	Support for this command was added in Interface subtype configuration mode and the *ip-address* option was added.

ip helper-address

Configures a helper address on the interface connected to the client to enable forwarding of client broadcast request for a UDP application when the client and server are on different networks.

Syntax

ip helper-address *address-number* [*ip-address* [**unicast**]]

no ip helper-address *address-number* [*ip-address* [**unicast**]]

Command Default

IP helper address is not configured.

Parameters

address-number

Specifies the IP helper address number. Valid values are 1 to 16.

ip-address

Specifies the server IP address or the subnet directed broadcast address of the IPsubnet the server is in.

unicast

Specifies that the client request must be forwarded to the server that is on thesame network.

Modes

Interface configuration mode

Usage Guidelines

To forward a client broadcast request for a UDP application when the client and server are on different networks, you must configure a helper address on the interface connected to the client. Specify the server IP address or the subnet directed broadcast address of the IP subnet the server is in as the helper address.

You can configure up to 16 helper addresses on each interface. You can configure a helper address on an Ethernet port or a virtual interface.

By default, IP helper does not forward client broadcast request to a server within the network. To forward a client broadcast request when the client and server are on the same network, configure an IP helper with **unicast** option on the interface connected to the client.

The **no** form of the command removes the configured helper address.

Examples

The following example configures an IP helper address on Ethernet interface 1/1/1.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip helper-address 1 10.20.3.4
```

The following example configures an IP helper address on Ethernet interface 1/2/2 to enable forwarding of broadcast request to a server within the network.

```
device(config)# interface ethernet 1/2/2
device(config-if-e1000-1/1/1)# ip helper-address 2 10.10.3.4 unicast
```

ip helper-use-responder-ip

Configures the device so that a BOOTP or DHCP reply to a client contains the server IP address as the source address instead of the router IP address.

Syntax

ip helper-use-responder-ip

no ip helper-use-responder-ip

Modes

Global configuration mode

Examples

The following example retains the responder source IP in the reply.

```
device(config)# ip helper-use-responder-ip
```

ip hitless-route-purge-timer

Configures the timer to set the duration for which the routes should be preserved after switchover.

Syntax

ip hitless-route-purge-timer *seconds*

no ip hitless-route-purge-timer *seconds*

Command Default

The default timer setting is 45 seconds.

Parameters

seconds

Specifies the time after switchover to start IPv4 route purge. The value can range from 2 to 600 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the configured value and sets the timer to the default 45 seconds.

Examples

The following example shows how to set the IPv4 hitless purge timer to 60 seconds.

```
device(config)# ip hitless-route-purge-timer 60
```

ip icmp attack-rate

Configures the device to drop ICMP packets when an excessive packet rate is encountered.

Syntax

ip icmp attack-rate burst-normal *threshold-value* **burst-max** *max-value* **lockup** *time*

no ip icmp attack-rate burst-normal *threshold-value* **burst-max** *max-value* **lockup** *time*

Command Default

No threshold values for ICMP packets are configured. It is recommended to configure ICMP protection for any switch vulnerable to these attacks.

Parameters

burst-normal *threshold-value*

Configures the allowable rate for packets received in normal burst mode. Valid values are from 20 through 10,000,000 Kbps.

burst-max *max-value*

Specifies the maximum packet rate in burst mode. Valid values are 20 through 10,000,000 Kbps.

lockup *time*

Configures the lockup period in seconds. Valid values are from 1 through 10,000 seconds.

Modes

Global configuration mode

Interface configuration sub-mode

VLAN configuration sub-mode

Usage Guidelines

NOTE
This command is not supported on RUCKUS ICX 8200 devices.

You can configure the device to drop ICMP packets when excessive number of packets are encountered as is the case when the device is the victim of a Smurf attack. You can set threshold values for ICMP packets that are targeted at the router itself or that pass through an interface, and drop them when the thresholds are exceeded.

The **no** form of the command removes the configured threshold values.

Examples

The following example sets threshold values for ICMP packets targeted at the router.

```
device(config)# ip icmp attack-rate burst-normal 2000 burst-max 2500 lockup 300
```

The following example sets threshold values for ICMP packets received on interface 3/1/1.

```
device(config)# interface ethernet 3/1/1
device(config-if-e1000-3/1/1)# ip icmp attack-rate burst-normal 2000 burst-max 2500 lockup 300
```

The following example sets the threshold value for ICMP packets received on interfaces that are members of VLAN 22.

```
device(config)# interface vlan 22
device(config-vlan-22)# ip icmp attack-rate burst-normal 2000 burst-max 2500 lockup 300
```

ip icmp burst-max

Limits the rate of ICMP pings to the CPU

Syntax

ip icmp burst-max { *value* }

no ip icmp burst-max { *value* }

Command Default

By default, ICMP pings to the CPU are not rate-limited.

Parameters

value

The maximum allowable burst rate (Kbps) for TCP SYN and ICMP packets. Valid values are 20 through 10000000 kbps.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command resets the ICX device to the default.

Examples

The following example configures ICMP ping-to-CPU rate limiting at the global level.

```
device# configure terminal
device(config)# ip icmp burst-max 3000
```

The following example configures ICMP ping-to-CPU rate limiting at the interface level.

```
device# configure terminal
device(config)# interface ethernet 1/1/10
(config-if-e1000-1/1/10) ip icmp burst-max 2500
```

History

Release version	Command history
10.0.00	This command was introduced.

ip icmp echo broadcast-request

Enables an ICMP echo response caused by a broadcast echo request.

Syntax

ip icmp echo broadcast-request

no ip icmp echo broadcast-request

Command Default

By default, devices are enabled to respond to broadcast ICMP echo packets, which are ping requests.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the response to broadcast ICMP echo packets (ping requests).

Examples

The following example enables an ICMP echo response caused by a broadcast echo request.

```
device(config)# ip icmp echo broadcast-request
```

ip icmp icmp-fragments

Drops ICMP packet fragments.

Syntax

ip icmp icmp-fragments

no ip icmp icmp-fragments

Command Default

By default, the ICMP packet fragments are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command resets the ICX device to the default setting.

Examples

The following example configures the ICX device to drop any ICMP packet fragments that are received.

```
device# configure terminal
device(config)# ip icmp icmp-fragments
```

History

Release version	Command history
10.0.00	This command was introduced.

ip icmp redirects

Enables IPv4 ICMP redirect messages.

Syntax

ip icmp redirects

no ip icmp redirects

Command Default

By default, IP ICMP redirect at the global level is disabled and a Layer 3 switch does not send an ICMP redirect message to the source of a misdirected packet in addition to forwarding the packet to the appropriate router.

Modes

Global configuration mode

VE interface configuration mode

Usage Guidelines

You can enable and disable IPv4 ICMP redirect messages globally or on individual Virtual Ethernet (VE) interfaces, but not on individual physical interfaces.

NOTE
The device forwards misdirected traffic to the appropriate router, even if you disable the redirect messages.

The **no** form of the command removes the ICMP redirect control.

Examples

The following example configures the IP redirect messages at the global level.

```
device(config)# ip icmp redirects
```

The following example configures the IP redirect messages on a VE interface.

```
device(config)# interface ve 10
device(config-vif-10)# ip icmp redirects
```

ip icmp unreachable

Enables sending ICMP unreachable messages.

Syntax

ip icmp unreachable { **administration** | **fragmentation-needed** | **host** | **network** | **port** | **protocol** | **source-route-fail**}

no ip icmp unreachable { **administration** | **fragmentation-needed** | **host** | **network** | **port** | **protocol** | **source-route-fail**}

Command Default

By default, when a device receives an IP packet that the device cannot deliver, the device sends an ICMP unreachable message back to the host that sent the packet.

Parameters

administration
Sends the ICMP unreachable message when the packet is dropped by the device due to a filter or ACL configured on the device.

fragmentation-needed
Sends the ICMP unreachable message when the packet has the Do not Fragment bit set in the IP Flag field, but the device cannot forward the packet without fragmenting it.

host
Sends the ICMP unreachable message when the destination network or subnet of the packet is directly connected to the device, but the host specified in the destination IP address of the packet is not on the network.

network
Sends the ICMP unreachable message when the destination network is

port
Sends the ICMP unreachable message when the destination host does not have the destination TCP or UDP port specified in the packet. In this case, the host sends the ICMP port unreachable message to the device, which in turn sends the message to the host that sent the packet.

protocol
Sends the ICMP unreachable message when TCP or UDP on the destination host is not running. This message is different from the port unreachable message, which indicates that the protocol is running on the host but the requested protocol port is unavailable.

source-route-fail
Sends the ICMP unreachable message when the device received a source-routed packet but cannot locate the next hop IP address indicated in the packet Source-Route option.

Modes

Global configuration mode

Usage Guidelines

You can disable the device from sending these types of ICMP messages on an individual basis.

> **NOTE**
> Disabling an ICMP unreachable message type does not change the device ability to forward packets. Disabling ICMP unreachable messages prevents the device from generating or forwarding the unreachable messages.

The **no** form of the command disables the ICMP unreachable messages.

Examples

The following example enables the ICMP unreachable message when the destination network or subnet of the packet is directly connected to the device, but the host specified in the destination IP address of the packet is not on the network.

```
device(config)# ip icmp unreachable host
```

ip igmp access-group

Configures the Internet Group Management Protocol (IGMP) report filter policy globally, for a non-default virtual routing and forwarding (VRF) instance, or for an Interface.

Syntax

ip igmp access-group { *acl-name* | *acl-number* }

no ip igmp access-group { *acl-name* | *acl-number* }

Command Default

The IGMP report filter policy is not configured.

Parameters

acl-name
Specifies an ACL name.

acl-number
Specifies an ACL number. Valid values range from 1 through 199.

Modes

Global configuration mode

Interface subtype configuration mode

VRF configuration mode

Usage Guidelines

ACL rules are used to configure which multicast group addresses, source addresses, or report and leave messages are to be dropped or allowed. For standard ACLs, only multicast group addresses and prefixes are configured, because this ACL is used for group filtering only. For extended ACLs, multicast group addresses or prefixes are configured as destination IP prefixes and the source addresses and prefixes are configured as the source IP address and prefix.

If the specified ACL is not configured, the IGMP report messages for all multicast group addresses and source addresses are dropped.

If an IGMP report filter policy is configured both globally and at the interface level, only the interface filter is applied.

The **no** form of the command disables the configured IGMP report filter policy.

Examples

The following example configures the IGMP report filter policy globally.

```
device# configure terminal
device(config)# ip igmp access-group test1-v4
```

The following example configures the IGMP report filter policy for a VE interface.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ip igmp access-group test1-v4
```

History

Release version	Command history
09.0.10	This command was introduced.

ip igmp group-membership-time

Specifies how long an IGMP group remains active on an interface in the absence of a group report.

Syntax

ip igmp group-membership-time *num*

no ip igmp group-membership-time *num*

Command Default

By default, a group will remain active on an interface for 260 seconds in the absence of a group report.

Parameters

num

Number in seconds, from 5 through 26000.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command resets the group membership time interval to the default of 260 seconds.

Group membership time defines how long a group will remain active on an interface in the absence of a group report.

Examples

This example specifies an IGMP (V1 and V2) membership time of 240 seconds.

```
Device(config)# ip igmp group-membership-time 240
```

ip igmp max-group-address

Configures the maximum number of Internet Group Management Protocol (IGMP) group addresses.

Syntax

ip igmp max-group-address *num*

no ip igmp max-group-address *num*

Command Default

The default number of IGMP group addresses is 4096.

Parameters

num

Specifies the maximum number of IGMP group addresses available, either for the default VRF or for a specified VRF.

Modes

Global configuration mode

Interface subtype configuration mode

VRF configuration mode

Usage Guidelines

This command replaces the **system-max igmp-max-group-address** command.

The **no** form of the command restores the default value (4096).

Examples

The following example configures a maximum of 1000 IGMP addresses for the default VRF.

```
device# configure terminal
device(config)# ip igmp max-group-address 1000
```

The following example configures a maximum of 1000 IGMP group addresses for the VRF named vpn1.

```
device# configure terminal
device(config)# vrf vpn1
device(config-vrf-vpn1)# address-family ipv4
device(config-vrf-vpn1-ipv4)# ip igmp max-group-address 1000
```

The following example configures a maximum of 1000 IGMP group addresses for a VE interface.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ip igmp max-group-address 1000
```

History

Release version	Command history
09.0.10	Support for this command was added at Interface configuration mode.

ip igmp max-response-time

Defines how long a device waits for an Internet Group Management Protocol (IGMP) response from an interface before determining that the group member on that interface is down and removing the interface from the group.

Syntax

ip igmp max-response-time *value*

no ip igmp max-response-time *value*

Command Default

The device waits 10 seconds for an IGMP response.

Parameters

value

Specifies the amount of time, in seconds, that the device waits for an IGMP response. Valid values range from 1 through 50. The default is 10 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the maximum response time interval to the default of 10 seconds.

Examples

The following example changes the IGMP maximum response time to 30 seconds.

```
device# configure terminal
device(config)# ip igmp max-response-time 8
```

The following example restores the IGMP maximum response time to the default of 10 seconds.

```
device# configure terminal
device(config)# no ip igmp max-response-time
```

History

Release version	Command history
08.0.95	This command was updated to change the IGMP maximum response time maximum value from 25 seconds to 50 seconds.

ip igmp port-version

Configures an IGMP version recognized by a physical port that is a member of a virtual routing interface.

Syntax

ip igmp port-version *version-number* **ethernet** *unit/slot/port* [**to ethernet** *unit/slot/port*[**ethernet** *unit/slot/port*...]]

no ip igmp port-version *version-number* **ethernet** *unit/slot/port* [**to ethernet** *unit/slot/port*[**ethernet** *unit/slot/port*..]]

Command Default

IGMP Version 2 is enabled.

Parameters

version-number

Specifies the version number: 1, 2, or 3. Version 2 is the default.

ethernet *unit/slot/port*

Specifies the Ethernet interface.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command restores the default; IGMP Version 2 is enabled.

Examples

The following example enables IGMP Version 3 on a physical port that is a member of a virtual routing interface. It first enables IGMP Version 2 globally, then enables Version 3 on ports 1/1/3 through 1/1/7 and port 1/2/9. All other ports in this virtual routing interface are configured with IGMP Version 2.

```
device(config)#interface ve 3
device(config-vif-3)# ip igmp version 2
device(config-vif-3)# ip igmp port-version 3 ethernet 1/1/3 to ethernet 1/1/7 ethernet 1/2/9
```

ip igmp proxy

Configures IGMP proxy on an interface

Syntax

ip igmp proxy [**group-filter** *access-list*]

no ip igmp proxy [**group-filter** *access-list*]

Command Default

IGMP proxy is not enabled.

Parameters

group-filter

Specifies filtering out groups in proxy report messages.

access-list

Specifies the access list name or number you want filtered out.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command disables IGMP proxy on an interface.

IGMP proxy is supported only in PIM dense environments where there are IGMP clients connected to the device. PIM DM must be enabled in passive mode.

IGMP proxy is not supported on interfaces on which PIM sparse mode (SM) or Source Specific Multicast (SSM) is enabled.

Enter the **ip igmp proxy** command without the **group-filter** keyword to remove the group-filter association without disabling the proxy.

Examples

This example enables IGMP proxy on an interface. It first shows how to configure PIM globally, configure an IP address that will serve as the IGMP proxy for an upstream device on interface 1/3/3, enable PIM passive on the interface, and then enable IGMP proxy.

```
device(config)# router pim
device(config)# interface ethernet 1/3/3
device(config-if-e1000-1/3/3)# ip address 10.95.5.1/24
device(config-if-e1000-1/3/3)# ip pim passive
device(config-if-e1000-1/3/3)# ip igmp proxy
```

The following example filters out the ACL1 group in proxy report messages.

```
device(config)# router pim
device(config)# interface ethernet 1/3/3
device(config-if-e1000-1/3/3)# ip address 10.95.5.1/24
device(config-if-e1000-1/3/3)# ip pim passive
device(config-if-e1000-1/3/3)# ip igmp proxy group-filter ACL1
```

ip igmp query-interval

Defines how often a device queries an interface for IGMP group membership.

Syntax

ip igmp query-interval *num*

no ip igmp query-interval *num*

Command Default

The query interval is 125 seconds

Parameters

num

Number in seconds, from 2 through 3600. The default is 125.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command resets the query interval to the default of 125 seconds.

You must specify a query-interval value that is a little more than twice the group membership time. You can configure the `ip igmp group-membership-time` command to specify the IGMP group membership time.

Examples

This example sets the IGMP query interval to 120 seconds.

```
Device(config)# ip igmp query-interval 120
```

ip igmp ssm-map

Enables IGMPv2 SSM mapping and defines the SSM maps between IGMPv2 Group addresses and multicast source addresses.

Syntax

ip igmp ssm-map { *access-list ip-address* | **enable** }

no ip igmp ssm-map { *access-list ip-address* | **enable** }

Command Default

SSM mapping is disabled.

Parameters

access-list

Specifies the name or number of the access list that contains the group multicast address.

ip-address

Specifies the source IP address to map to the group multicast address specified in the ACL..

enable

Enables IGMPv2 SSM mapping.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command with the **enable** keyword disables IGMPv2 mapping.

The **no** form of the command with the *access-list ip-address* parameters removes an SSM map between an IGMPv2 group address and a multicast source address.

Examples

The following example enables IGMPv2 mapping.

```
device# configure terminal
device(config)# ip igmp ssm-map enable
```

The following example configures an SSM map between an IGMPv2 group address and a multicast source address.

```
device# configure terminal
device(config)# ip igmp ssm-map 20 10.1.1.1
```

ip igmp static-group

Configures one or more physical ports to be a permanent (static) member of an IGMP group based on the range or count. Manually adds a port to a multicast group.

Syntax

ip igmp static-group *ip-addr* [**count** *count-number* | **to** *ip-addr*] [**ethernet** *unit/slot/port*]

no ip igmp static-group *ip-addr* [**count** *count-number* | **to** *ip-addr*] [**ethernet** *unit/slot/port*]

Command Default

The port is not added to multicast group.

Parameters

ip-addr
: The address of the static IGMP group.

count *count-number*
: Specifies the number of continous static groups The range is from 2 through 256.

ethernet *unit/slot/port*
: Specifies the ID of the physical port of the VLAN that will be a member of the group.

to
: Specifies a range of interface.

Modes

Interface configuration mode

Usage Guidelines

You can manually add a multicast group to individual ports only. If the port is a member of a virtual routing and forwarding (VRF) interface, you must add the ports to the group individually.

IGMP Version 3 does not support static IGMP group members.

Static IGMP groups are supported only in Layer 3 mode.

The **no** form of this command removes the port from the static group.

Examples

The following example manually adds port 1/1/2 to multicast group 224.2.2.2.

```
device(config)# interface ethernet 1/1/2
device(config-if-e10000-1/1/2)# ip igmp static-group 224.2.2.2
```

The following example adds port 5/2 that is a member of a VRF interface 1 to multicast group 224.2.2.2.

```
device(config)# interface ve 1
device(config-vif-1)# ip igmp static-group 224.2.2.2 ethernet 5/2/2
```

The following example configures two static groups on virtual ports starting from 226.0.0.1, using the **count** keyword.

```
device(config)# interface ethernet 1/5/1
device(config-if-e1000-1/5/1)# ip igmp static-group 226.0.0.1 count 2 ethernet 1/5/1
```

The following example configures two static groups on virtual ports starting from 226.0.0.1, using the **to** keyword.

```
device(config)# interface ve 10
device(config-vif-10)# ip igmp static-group 226.0.0.1 to 226.0.0.2 ethernet 1/5/1
```

The following example configures two static groups starting from 226.0.0.1, using the **count** keyword.

```
device(config)# interface ethernet 1/5/1
device(config-if-e1000-1/5/1)# ip igmp static-group 226.0.0.1 count 2
```

ip igmp tracking

Enables tracking and fast leave on an interface.

Syntax

ip igmp tracking

no ip igmp tracking

Command Default

Tracking and fast leave are disabled.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command restores the default; tracking and fast leave are disabled.

The IGMP Version 3 fast leave feature is supported in include mode but does not work in exclude mode.

Examples

This example enables tracking and fast leave on a virtual routing interface.

```
Device(config)# interface ve 13
Device(config-vif-13)# ip igmp tracking
```

This example enables tracking and fast leave on a physical interface.

```
Device(config)# i(config)#interface ethernet 1/2/2
Device(config-if-e10000-1/2/2)# ip igmp tracking
```

ip igmp version

Specifies the IGMP version on a device.

Syntax

ip igmp version *version-number*

no ip igmp version *version-number*

Command Default

IGMP Version 2 is enabled.

Parameters

version-number

Specifies the version number: 1, 2, or 3. Version 2 is the default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default; IGMP Version 2 is enabled.

Configure the **ip igmp port-version** command to configure an IGMP version recognized by a physical port that is a member of a virtual routing interface.

Examples

The following example enables IGMP Version 3 globally.

```
device# configure terminal
device(config)# ip igmp version 3
```

The following example, in interface configuration mode, enables IGMP Version 3 for a physical port.

```
device# configure terminal
device(config)# interface ethernet 1/1/5
device(config-if-1/1/5)# ip igmp version 3
```

The following example, in interface configuration mode, enables IGMP Version 3 for a virtual routing interface on a physical port.

```
device# configure terminal
device(config)# interface ve 3
device(config-vif-1)# ip igmp version 3
```

ip irdp

Enables ICMP Router Discovery Protocol (IRDP) globally.

Syntax

ip irdp

no ip irdp

Command Default

IRDP is disabled.

Modes

Global configuration mode

Usage Guidelines

IRDP is used by Layer 3 switches to advertise the IP addresses of its router interfaces to directly attached hosts.

You can enable the feature on a global basis or on an individual port basis. If you enable the feature globally, all ports use the default values for the IRDP parameters. If you leave the feature disabled globally but enable it on individual ports, you also can configure the IRDP parameters on an individual port basis. Use the **ip irdp** command in interface configuration mode to enable IRDP on individual ports.

The **no** form of the command disables IRDP.

Examples

The following example enables IRDP globally.

```
device(config)# ip idrp
```

ip irdp (Interface)

Enables ICMP Router Discovery Protocol (IRDP) on an interface and configures IRDP parameters.

Syntax

ip irdp {**broadcast** | **multicast** } [**holdtime** *second s*] [**minadvertinterval** *seconds*] [**maxadvertinterval** *seconds*] [**preference** *number*]

no ip irdp {**broadcast** | **multicast** } [**holdtime** *second s*] [**minadvertinterval** *seconds*] [**maxadvertinterval** *seconds*] [**preference** *number*]

Command Default

IRDP is not enabled.

Parameters

broadcast

Configures the Layer 3 switch to send the Router Advertisement as IP broadcasts. This is the default.

multicast

Configures the Layer 3 switch to send the Router Advertisement as multicast packets addressed to IPmulticast group 224.0.0.1.

holdtime *seconds*

Specifies how long a host that receives a Router Advertisementfrom the Layer 3 switch should consider the advertisement to be valid. The value must be greater than the value of themaxadvertinterval parameter and cannot be greater than 9000. The default is three times the valueof the maxadvertinterval parameter.

minadvertinterval *seconds*

Specifies the minimum amount of time the Layer 3 switch can waitbetween sending Router Advertisements. The default is three-fourths (0.75) the value of themaxadvertinterval parameter.

maxadvertinterval *seconds*

Specifies the maximum amount of time the Layer 3 switch waits between sending Router Advertisements. You can specify a value from 1 to the current value of theholdtime parameter. The default is 600 seconds.

preference *number*

Specifies the IRDP preference level of this Layer 3 switch. If a host receives Router Advertisements from multiple routers, the host selects the router interface that sent the message with the highest interval. The valid range is from 0 to 4294967296. The default is 0.

Modes

Interface configuration mode

Usage Guidelines

IRDP is used by RUCKUS Layer 3 switches to advertise the IP addresses of its router interfaces to directly attached hosts.

You can enable the feature on a global basis or on an individual port basis. If you enable the feature globally, all ports use the default values for the IRDP parameters. If you leave the feature disabled globally but enable it on individual ports, you also can configure the IRDP parameters on an individual port basis. You cannot configure IRDP parameters on individual ports if the feature is globally enabled.

The **no** form of the command disables IRDP on the specific interface.

Examples

The following example enables IRDP on a specific port and changes the maximum advertisement interval for Router Advertisement messages to 400 seconds

```
device# configure terminal
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# ip irdp maxadvertinterval 400
```

ip-mac

Manually configures an IP MAC address on an IP interface.

Syntax

ip-mac *mac-address*

no ip-mac *mac-address*

Command Default

If an IP MAC address is not configured, the IP interface will use the MAC address of the device or the configured stack MAC address.

Parameters

MAC-address

Configures a MAC address on a physical or virtual Ethernet (VE) interface.

Modes

Interface configuration mode

Usage Guidelines

Use the **system-max max-ip-mac** command to change the maximum number of MAC addresses to be configured on IP interfaces. The number of MAC addresses to be configured on IP interfaces is a range from 120 to 248 with a default of 120.

Use the **show ip interface** command with a specified interface to view whether a MAC address is configured for the interface.

The **no** form of the command removes the MAC address from the interface.

Examples

The following example configures a MAC address on Ethernet interface 1/1/6.

```
device# configure terminal
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip-mac aaaa.bbbb.cccc
```

History

Release version	Command history
08.0.40	This command was introduced.

ip max-mroute

Configures the maximum number of IPv4 multicast routes that are supported.

Syntax

ip max-mroute *num*

no ip max-mroute *num*

Command Default

No maximum number of supported routes is configured.

Parameters

num

Configures the maximum number of multicast routes supported.

Modes

VRF configuration mode

Usage Guidelines

The **no** form of this command restores the default (no maximum number of supported routes is configured).

Examples

The following example configures the maximum number of 20 supported IPv4 multicast routes on the VRF named my_vrf.

```
Device(config)# vrf my_vrf
Device(config)# address-family ipv4
Device(config-vrf)# ip max-mroute 20
```

History

Release version	Command history
08.0.10a	This command was introduced.

ip mroute

Configures a directly connected static IPv4 multicast route.

Syntax

ip mroute [**vrf** *vrf-name*] *ip-address ip-address mask* { **ethernet** *stackid* / *slot* / *portnum* | **ve** *num* | **tunnel** *num* } [*cost*] [**distance** *distance-value*] [**name** *name*]

no ip mroute [**vrf** *vrf-name*] *ip-address ip-address mask* { **ethernet** *stackid* / *slot* / *portnum*| **ve** *num* | **tunnel** *num* } [*cost*] [**distance** *distance-value*] [**name** *name*]

Command Default

No static IPv4 multicast route is configured.

Parameters

vrf *vrf-name*
Configures a static mroute for this virtual routing and forwarding (VRF) route.

ip-address ip-address mask
Configures the destination IPv4 address and prefix for which the route should be added.

ethernet *stackid* / *slot* /*portnum*
Configures an Ethernet interface as the route path.

ve *num*
Configures a virtual interface as the route path.

tunnel *num*
Configures a tunnel interface as the route path.

cost
Configures a metric for comparing the route to other static routes in the static route table that have the same destination. The range is 1-16; the default is 1.

distance *distance-value*
Configures the route's administrative distance. The range is 1-255; the default is 1.

name *name*
Name for this static route.

Modes

VRF configuration mode

Usage Guidelines

The **no** form of this command deletes a previously configured directly connected static multicast route.

Connected routes on PIM enabled interfaces are automatically added to the mRTM table.

Examples

The following example configures a directly connected mroute to network 10.1.1.0/24 on interface ve 10.

```
Device(config-vrf)# ip mroute 10.1.1.0 255.255.255.0 ve 10
```

History

Release version	Command history
08.0.10a	This command was introduced.

ip mroute (Next Hop)

Configures a static IPv4 multicast route (mroute) with a next hop..

Syntax

ip mroute [**vrf** *vrf-name*] *ip-address ip-address mask next-hop address* [*cost*] [**distance** *distance-value*] [**name** *name*]

no ip mroute [**vrf** *vrf-name*] *ip-address ip-address mask next-hop address* [*cost*] [**distance** *distance-value*] [**name** *name*]

Command Default

No next-hop static IPv4 multicast route is configured.

Parameters

vrf *vrf-name*

Configures a static mroute for this virtual routing and forwarding (VRF) route.

ip-address ip-address mask

Configures the destination IPv4 address and prefix for which the route should be added.

next-hop address

Configures a next-hop address as the route path.

cost

Configures a metric for comparing the route to other static routes in the static route table that have the same destination. The range is 1-16; the default is 1.

distance *distance-value*

Configures the route's administrative distance. The range is 1 through 255; the default is 1.

name *name*

Name for this static route.

Modes

VRF configuration mode

Usage Guidelines

The **no** form of this command deletes a previously configured next-hop static IPv4 multicast route.

Examples

The following example configures a next-hop static multicast IPv4 route to network 10.1.1.0/24 with next hop 10.2.1.1.

```
Device(config-vrf)# ip mroute 10.1.1.0 255.255.255.0 10.2.1.1
```

History

Release version	Command history
08.0.10a	This command was introduced.

ip mroute next-hop-enable-default

Enables the option to use the default multicast route (mroute) to resolve a static IPv4 mroute next hop.

Syntax

ip mroute [**vrf** *vrf-name*] **next-hop-enable-default**

no ip mroute [**vrf** *vrf-name*] **next-hop-enable-default**

Command Default

Static mroutes are not resolved using the default mroute.

Parameters

vrf *vrf-name*

Configures a static mroute for this virtual routing and forwarding (VRF) route.

Modes

VRF configuration mode

Usage Guidelines

The **no** form of this command disables the default IPv4 mroute option for next hops.

Examples

The following example enables the use of the default mroute to resolve a static IPv4 mroute next hop:

```
Device(config-vrf)# ip mroute next-hop-enable-default
```

History

Release version	Command history
08.0.10a	This command was introduced.

ip mroute next-hop-recursion

Configures the recursion level when using static mroutes to resolve a static mroute next hop.

Syntax

ip mroute [**vrf** *vrf-name*] **next-hop-recursion** *num*

no ip mroute [**vrf** *vrf-name*] **next-hop-recursion**

Command Default

The recursion level for resolving a static mroute next hop is 3.

Parameters

vrf *vrf-name*

Configures a static mroute for this virtual routing and forwarding (VRF) route.

num

Specifies the recursion level used to resolve a static mroute next hop. The range of possible values is from 1 to 10. This is not used in the **no** form.

Modes

VRF configuration mode

Usage Guidelines

The **no** form restores the default recursion level for resolving a static mroute next hop, which is 3. You do not specify a value for the recursion level.

Examples

The following example configures the recursion level for resolving a static mroute next hop to 7:

```
device(config)# vrf vrf2
device(config-vrf-vrf2)# ip mroute next-hop-recursion 7
```

The following example configures the recursion level for resolving a static mroute next hop to 2:

```
device(config)# vrf vrf2
device(config-vrf-vrf2)# ip mroute next-hop-recursion 2
```

The following example restores the default recursion level of 3 for resolving a static mroute next hop:

```
device(config)# vrf vrf2
device(config-vrf-vrf2)# no ip mroute next-hop-recursion
```

History

Release version	Command history
08.0.10a	This command was introduced.

ip mtu

Changes the MTU for a specific interface.

Syntax

ip mtu *value*

no ip mtu *value*

Command Default

1500 bytes for Ethernet II encapsulation and 1492 bytes for SNAP encapsulation. When jumbo mode is enabled, the default is 9216.

Parameters

value

Specifies the MTU. Ethernet II packets can hold IP packets from 576 through 1500 bytes long. If jumbo mode is enabled, Ethernet II packets can hold IP packets up to 10,178 bytes long. Ethernet SNAP packets can hold IP packets from 576 through 1492 bytes long. If jumbo mode is enabled, SNAP packets can hold IP packets up to 10,174 bytes long. The default MTU for Ethernet II packets is 1500. The default MTU for SNAP packets is 1492.
For ICX 7850 devices, the maximum jumbo frame size supported is 9380. When jumbo mode is enabled, the maximum ethernet MTU size is 9358 bytes.

Modes

Interface configuration mode

Usage Guidelines

If you set the MTU of a port to a value lower than the global MTU and from 576 through 1499, the port fragments the packets. However, if the port MTU is exactly 1500 and this is larger than the global MTU, the port drops the packets. The minimum IPv4 MTU values for both physical and virtual interfaces are 1280.

You must save the configuration change and then reload the software to enable the configuration.

The **no** form of the command resets the default MTU values.

Examples

The following example configures the IP MTU as 1300.

```
device(config)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip mtu 1300
device(config-if-e1000-1/1/5)# write memory
device(config-if-e1000-1/1/5)# end
device# reload
```

ip multicast

Sets IGMP globally on a device, and sets the IGMP mode as active or passive.

Syntax

ip multicast active

ip multicast passive

no ip multicast active

no ip multicast passive

Command Default

IGMP mode is passive.

Parameters

active

Configures IGMP active mode so that the device actively sends out IGMP queries to identify multicast groups on the network, and makes entries in the IGMP table based on the group membership reports it receives.

passive

Configures IGMP passive mode so that the device does not send queries but forwards reports to the router ports that receive queries. When passive mode is configured on a VLAN, queries are forwarded to the entire VLAN.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

Routers in the network generally handle mode. Configure active IGMP mode only on a device is in a standalone Layer 2 Switched network with no external IP multicast router attachments. If you want to configure active IGMP mode on a device in such a network, you should do so on only one device and leave the others configured as passive.

The IGMP mode configured on a VLAN overrides the mode configured globally.

The **no** form of the command restores the default.

Examples

The following example enables IGMP mode globally for a device and configures IGMP mode as active.

```
device# configure terminal
device(config)# ip multicast active
```

The following example enables IGMP mode for VLAN 20 and configures IGMP mode as passive.

```
device# configure terminal
device(config)# config vlan 20
device(config-vlan-20)# ip multicast active
```

ip multicast age-interval

Configures the time that group entries can remain in an IGMP group table on a specific VLAN or on all VLANs.

Syntax

ip multicast age-interval[**vlan***vlan-id*]*interval*

no ip multicast age-interval[**vlan***vlan-id*]*interval*

Command Default

Group entries can remain in the IGMP group table for up to 260 seconds.

Parameters

vlan*vlan-id*

Specifies a VLAN.

interval

Specifies time, in seconds, that group entries can remain in the IGMP group table. The range is 20 through 26000 seconds. The default is 260 seconds.

Modes

Global configuration mode

Usage Guidelines

When entered without the **vlan** keyword, this command configures the time that group entries can remain in an IGMP group table on all VLANs.

When a device receives a group membership report it makes an entry for that group in the IGMP group table. You can configure the **ip multicast age-interval** to specify how long the entry can remain in the table before the device receives another group membership report. When multiple devices are connected, they must all be configured for the same age interval, which must be at least twice the length of the query interval, so that missing one report does not stop traffic.

Non-querier age intervals must be the same as the age interval of the querier.

NOTE
When there are two or more possible queriers, it is recommended to configure the IP multicast age interval to 20 seconds more than the default calculated age interval on all switches enabled with IGMP snooping. This prevents the aging of groups when the active querier fails.

The **no** form of this command restores the default age interval to 260 seconds.

Examples

This example configures the IGMP group-table age interval to 280 seconds.

```
device#configure terminal
device(config)#ip multicast age-interval 280
```

ip multicast edge-port

Configures edge ports for IGMP-snooping-enabled interfaces.

Syntax

ip multicast edge-port { **ethernet** *stackid/slot/port* [**to** *stackid/slot/port*] |**lag** *lag-id* [**to** *lag-id*] | **none** }

no ip multicast edge-port { **ethernet** *stackid/slot/port* [**to** *stackid/slot/port*] |**lag** *lag-id* [**to** *lag-id*] | **none** }

Command Default

Edge ports are not configured.

Parameters

ethernet *stackid/slot/port*

Specifies an Ethernet interface

to *stackid/slot/port*

Specifies a range of Ethernet interfaces.

lag *lag-id*

Specifies a LAG interface.

to *lag-id*

Specifies a range of LAG interfaces.

none

Specifies that none of the ports are configured as edge ports.

Modes

Global configuration mode.

Usage Guidelines

The **no** form of the command removes configured edge ports for IGMP-snooping-enabled interfaces.

Examples

The following example configures edge ports for a range of Ethernet interfaces.

```
device# configure terminal
device(config)# ip multicast edge-port ethernet 1/1/1 to 1/1/10
```

The following example configures edge ports for a a range of LAG interfaces.

```
device# configure terminal
device(config)# ip multicast edge-port lag 1 to 10
```

The following example specifies that no ports are configured as edge ports.

```
device# configure terminal
device(config)# ip multicast edge-port none
```

History

Release version	Command history
09.0.00	This command was introduced.

ip multicast flood-unregistered

Enables the flooding of initial packets for unregistered IP multicast groups until hardware entries are programmed. Once the hardware entries are programmed, packets are dropped for unregistered multicast groups.

Syntax

ip multicast flood-unregistered

no ip multicast flood-unregistered

Command Default

Flooding behaviour is not enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the flooding of initial packets for IP multicast frames.

Examples

The following example enables flooding behavior for IP Multicast frames.

```
device# configure terminal
device(config)# ip multicast flood-unregistered
```

The following example disables flooding behavior for IP Multicast frames.

```
device# configure terminal
device(config)# no ip multicast flood-unregistered
```

History

Release version	Command history
09.0.00	This command was introduced.

ip multicast leave-wait-time

Configures the wait time before stopping traffic to a port when a leave message is received.

Syntax

ip multicast leave-wait-time *num*

no ip multicast leave-wait-time *num*

Command Default

The wait time is 2 seconds.

Parameters

num

Specifies the time, in seconds, the device should wait before stopping traffic to a port when a leave message is received The range is 1 through 5 seconds. The default is 2 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default wait time.

The device sends group-specific queries once per second to ask if any client in the same port still needs this group. Because of internal timer granularity, the actual wait time is between n and (n+1) seconds (n is the configured value).

Examples

This example configures the maximum time a client can wait before responding to a query to 1 second.

```
Device(config)#ip multicast leave-wait-time 1
```

ip multicast max-response-time

Sets the maximum number of seconds a client (IPv4) can wait before responding to a query sent by the device.

Syntax

ip multicast max-response-time *interval*

no ip multicast max-response-time *interval*

Command Default

The wait time is 10 seconds.

Parameters

interval

Specifies the maximum time, in seconds, a client can wait before responding to a query sent by the switch. The range is 1 through 25 seconds. The default is 10 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default maximum interval.

Examples

This example configures the maximum time a client can wait before responding to a query to 5 seconds.

```
device(config)# ip multicast max-response-time 5
```

History

Release version	Command history
08.0.40	This command was modified to increase the range of the maximum response time from 1 through 10 seconds to 1 through 25 seconds.

ip multicast mcache-age

Configures the time for an mcache to age out when it does not receive traffic.

Syntax

ip multicast mcache-age*num*

no ip multicast mcache-age

Command Default

The mcache ages out after the default age-out interval.

Parameters

num

Specifies the time, in multiples of 60 seconds, the device should wait before stopping traffic to a port when a leave message is received The range is 60 through 3600 seconds, in multiples of 60. The default is 180 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default mcache age-out time.

Multicast traffic is hardware switched. One minute before aging out an mcache, the device mirrors a packet of this mcache to CPU to reset the age. If no data traffic arrives within 60 seconds, this mcache is deleted. Configuring a lower age-out time removes resources consumed by idle streams quickly, but it mirrors packets to CPU often. Configure a higher value only when data streams are arriving consistently.

NOTE
Multicast mcache may not expire according to the configured time. You may notice a delay of 0 to 60 seconds over the configured value.

Examples

This example configures the time for an mcache to age out to 180 seconds.

```
device(config)# ip multicast mcache-age 180
```

History

Release version	Command history
08.0.60	Added note about multicast mcache expiry.

ip multicast mvr

Enables Multicast VLAN Registration (MVR) on the device.

Syntax

ip multicast mvr

ip multicast mvr mvlan *mvlan-id* **group** *mvr-grp-addr* [**count** *value* | **to** *mvr-grp-addr*]

no ip multicast mvr

no ip multicast mvr mvlan *mvlan-id* **group** *mvr-grp-addr* [**count** *value* | **to** *mvr-grp-addr*]

Command Default

MVR is not enabled by default.

Parameters

mvlan *mvlan-id*
: Specifies to configure other options for MVLAN in which multicast data is received; all source ports must belong to this VLAN. The VLAN ID range is 1 through 4095.

group *mvr-grp-addr*
: Configures MVR groups by assigning a range of multicast group addresses to the MVLAN. Maximum number of MVLANs supported is 10 and 100 MVLANs to group configurations.

count *value*
: Configures a continuous series of MVR groups by specifying the number of groups to be assigned to the MVLAN.

to *mvr-grp-addr*
: Specifies the range of the continuous series of MVR groups by specifying the end IP address of MVR group.

Modes

Global configuration mode

Usage Guidelines

This command is a mandatory global command to enable MVR on the device. This command is required to configure any of the other MVR commands.

Disabling this command erases all other MVR configurations.

The global MVR configuration does not enable MVR on the VLAN. To enable MVR on the VLAN, you must use the **multicast mvr** command in VLAN configuration mode.

By default, an MVR group is associated with an incoming VLAN and goes through normal snooping. The **group** option allows you to selectively associate sets of groups to the MVLAN, thereby enabling it to go through the MVR module. Moreover, you can associate unique group sets to different MVLANs, and therefore create multiple MVLANs in the system.

A group address can be mapped to a single MVLAN only.

By default all groups are treated as snooping groups. To enable MVR for specified groups, use the **ip multicast mvr mvlan** command.

The **no** form of the command (**no ip multicast mvr**) removes all MVR configurations. To disable MVR on a specific VLAN, you must remove the MVR (source or receiver) configuration from the VLAN.

Examples

The following example configures MVR globally and assigns group to the MVLAN.

```
device(config)# ip multicast mvr
device(config)# ip multicast mvr mvlan 1 group 225.0.0.1
```

The following example configures MVR globally and assigns continuous series of MVR groups by specifying the number of groups to be assigned to MVLAN.

```
device(config)# ip multicast mvr
device(config)# ip multicast mvr mvlan 1 group 226.0.0.1 count 100
```

The following example configures MVR globally and assigns continuous series of MVR groups by specifying the end IP address of MVR group.

```
device(config)# ip multicast mvr
device(config)# ip multicast mvr mvlan 200 group 238.1.1.1 to 238.1.1.5
```

History

Release version	Command history
09.0.10	This command was introduced.
09.0.10a	The *mvlan-id* option was deprecated.

ip multicast optimization

Enables or disables IP multicast (IPMC) entry optimization for Layer 2 IPv4 multicast flows.

Syntax

ip multicast optimization oif-list all

no ip multicast optimization oif-list all

Command Default

IPMC entry optimization is enabled by default.

Parameters

oif-list

Shares the Output Interface Lists across entries.

all

Specifies all types of Output Interface Lists.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables hardware entry optimization for Layer 2 IPv4 multicast flows. The command must be followed by the **write memory** command and the **reload** command for the changes to take effect.

Examples

The following example re-enables hardware entry optimization for Layer 2 IPv4 multicast flows.

```
device# configure termnail
device(config)# ip multicast optimization oif-list all
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
08.0.40	This command was introduced.

ip multicast query-interval

Configures how often the device sends general queries when IP multicast traffic reduction is set to active mode.

Syntax

ip multicast query-interval *interval*

no ip multicast query-interval *interval*

Command Default

The query interval is 125 seconds.

Parameters

interval

Specifies the time, in seconds, between queries. The range is 10 through 3600 seconds. The default is 125 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the query interval to 125 seconds.

You can configure this command only when IP multicast traffic reduction is set to active IGMP snooping mode.

When multiple queries are connected, they must all be configured for the same interval.

Examples

This example configures the time between queries to 120 seconds.

```
Device(config)#ip multicast query-interval 120
```

ip multicast report-control

Limits report forwarding within the same multicast group to no more than once every 10 seconds.

Syntax

ip multicast report-control

no ip multicast report-control

Command Default

A device in passive mode forwards reports and leave messages from clients to the upstream router ports that are receiving queries.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default.

> **NOTE**
> This feature applies to IGMP V2 only. The leave messages are not rate limited.

This rate-limiting does not apply to the first report answering a group-specific query.

Configure this command to alleviate report storms from many clients answering the upstream router query.

The **ip multicast report-control** command was formerly named **ip igmp-report-control** . You can still configure the command as **ip igmp-report-control** ; however, it is renamed when you configure the **show configuration** command.

Examples

This example limits the rate of report forwarding within the same multicast group.

```
Device(config)#ip multicast report-control
```

ip multicast static-mcache profile

Adds multicast groups to a profile whose packets are always flooded or dropped in the hardware.

Syntax

ip multicast static-mcache profile *profile-id multicast-address* { **drop** | **flood** }

no ip multicast static-mcache profile *profile-id multicast-address* { **drop** | **flood** }

Command Default

A mulitcast address is not added to a profile.

Parameters

profile-id
: Specifies a profile. Valid values range from 1 through 10.

multicast-address
: Specifies a static mcache multicast address.

drop
: Specifies that the traffic is dropped.

flood
: Specifies that the traffic is flooded.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

The **no** form of the command removes multicast addresses from a profile.

Examples

The following example adds a multicast group to profile 10 and specifies that the traffic is dropped.

```
device# configure terminal
device(config)# ip multicast static-mcache profile 10 225.0.1.10 drop
```

The following example adds a mulitcast group to profile 10 and specifies that the traffic is flooded.

```
device# configure terminal
device(config)# ip multicast static-mcache profile 10 225.1.2.250 flood
```

The following example adds an IP address to profile 10 for a VLAN

```
device# configure terminal
device(config)# vlan 6
device(config-vlan6)# ip multicast static-mcache profile 10 225.0.0.2
```

History

Release version	Command history
09.0.00	This command was introduced.

ip multicast verbose-off

Turns off the error or warning messages displayed by the device when it runs out of software resources or when it receives packets with the wrong checksum or groups.

Syntax

ip multicast verbose-off

no ip multicast verbose-off

Command Default

Error and warning messages are displayed.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores display of error and warning messages .

Error and warning messages are rate-limited.

Examples

This example turns off error or warning messages .

```
Device(config)#ip multicast verbose-off
```

ip multicast version

Configures the IGMP version for snooping globally.

Syntax

ip multicast version [**2** | **3**]

no ip multicast version

Command Default

IGMP version 2 is configured.

Parameters

2

Configures IGMP version 2.

3

Configures IGMP version 3.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the version to IGMP version 2.

If Layer 3 multicast routing is enabled on the device, Layer 2 IGMP snooping is automatically enabled.

See the description of the **multicast version** command for information on how to configure the IGMP version on a VLAN.

See the description of the **multicast port-version** command for information on how to configure the IGMP version on an individual port

Examples

This example specifies IGMP version 3 on a device.

```
Device(config)#ip multicast version 3
```

ip multicast-boundary

Defines boundaries for PIM enabled interfaces.

Syntax

ip multicast-boundary *acl-spec*

no ip multicast-boundary *acl-spec*

Command Default

Boundaries are not defined.

Parameters

acl-spec

Specifies the number or name identifying an access list that controls the range of group addresses affected by the boundary.

Modes

VE interface configuration mode

Usage Guidelines

The **no** form of this command removes the boundary on a PIM enabled interface.

You can use standard ACL syntax to configure an access list.

Examples

The following example defines a boundary named MyAccessList for a PIM enabled interface.

```
device(config)# ip multicast-boundary MyAccessList
```

ip multicast-debug-mode

Enables global multicast debug mode for all VRFs.

Syntax

ip multicast-debug-mode

no ip multicast-routing

Command Default

Support for multicast debug mode is not enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default multicast debug mode.

Examples

This example shows how to enable global support for multicast debug mode.

```
Device(config)#ip multicast-debug-mode
```

ip multicast-routing optimization

Enables or disables IP multicast (IPMC) hardware entry optimization for Layer 3 IPv4 multicast flows.

Syntax

ip multicast-routing optimization oif-list all

no ip multicast-routing optimization oif-list all

Command Default

Hardware entry optimization is enabled by default.

Parameters

oif-list

Shares the Output Interface Lists across entries.

all

Specifies all types of Output Interface Lists.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables optimization for IPv4 multicast flows. Multicast routing entries are deleted and recreated when optimization is enabled or disabled on all VRFs. The command must be followed by the **write memory** command and the **reload** command for the changes to take effect.

Examples

The following example re-enables IPMC hardware entry optimization for IPv4 multicast flows.

```
device# configure terminal
device(config)# ip multicast-routing optimization oif-list all
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
08.0.40	This command was introduced.

ip multicast-routing rpf-check mac-movement

Triggers Reverse Path Forwarding (RPF) check on MAC movement for directly connected sources and sends a MAC address movement notification to the Protocol Independent Multicast (PIM) module which results in PIM convergence.

Syntax

ip multicast-routing rpf-check mac-movement

no ip multicast-routing rpf-check mac-movement

Command Default

RPF check on MAC movement for directly connected sources is not enabled.

Modes

Global configuration mode

Usage Guidelines

PIM convergence on MAC movement is applicable only in a topology where the multicast source port and PIM routers are in the same Layer 2 domain.

The **no** form of the command disables RPF check on MAC movement for directly connected sources.

Examples

The following example configures RPF check on MAC movement for directly connected sources.

```
device(config)# ip multicast-routing rpf-check mac-movement
```

History

Release version	Command history
08.0.10h	This command was introduced.
08.0.30	Support for the **ip multicast-routing rpf-check mac-movement** command was added in FastIron 08.0.30 and later releases.

ip options drop

Configures the IPv4 drop packet rule so that IPv4 packets with an option, such as insert NOP, insert loose source route, and insert MTU probe, are dropped.

Syntax

ip options drop

no ip options drop

Command Default

The IPv4 drop packet rule and hop-by-hop header options are not configured.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the IPv4 drop packet rule and hop by hop header options.

Examples

The following example enables the IPv4 drop packet rule.

```
device# configure terminal
device(config)# ip options drop
```

The following example disables the IPv4 drop packet rule.

```
device# configure terminal
device(config)# no ip options drop
```

History

Release version	Command history
09.0.10	This command was introduced.

ip ospf active

Sets a specific OSPF interface to active.

Syntax

ip ospf active

Modes

Interface subtype configuration mode

Usage Guidelines

Use the **ip ospf active** command on each interface participating in adjacency formation. This command overrides the global passive setting on that interface, and enables transmission of OSPF control packets.

Examples

The following example sets a specific OSPFv2 virtual Ethernet (VE) interface to active.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ip ospf active
```

ip ospf area

Enables OSPFv2 on an interface.

Syntax

ip ospf area *area-id* | *ip-addr*

no ip ospf area

Command Default

Disabled.

Parameters

area-id

Area ID in decimal format. Valid values range from 1 through 2147483647.

ip-addr

Area ID in IP address format.

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command disables OSPFv2 on the interface.

Examples

The following example enables a configured OSPFv2 area named 0 on a specific OSPFv2 virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ip ospf area 0
```

ip ospf authentication

Configures MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication for Open Shortest Path First version 2 (OSPFv2).

Syntax

ip ospf authentication { **md5** | **hmac-sha-1** | **hmac-sha-256**} **key-id** *key-id-val* **key** *key-string*

no ip ospf authentication { **md5** | **hmac-sha-1** | **hmac-sha-256**} *key-id-val* **key** *key-string*

Command Default

MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication is disabled by default.

Parameters

md5
Specifies MD5 authentication.

HMAC-SHA-1
Specifies HMAC-SHA-1 authentication.

HMAC-SHA-256
Specifies HMAC-SHA-256 authentication.

key-id *key-id-val*
Identifies the number of the MD5, HMAC-SHA-1 or HMAC-SHA-256 algorithm. The number can be from 1 through 255.

key *key-string*
Sets the corresponding key string to be used with the MD5, HMAC-SHA-1 or HMAC-SHA-256 algorithm. The recommended key string length is 1 through 63 characters.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication configuration on the OSPFv2 interface to which you are connected.

The **no** form of the command removes the MD5, HMAC-SHA-1 or HMAC-SHA-256 authentication configuration from the OSPFv2 interface.

Examples

The following example sets HMAC-SHA-1 authentication with key ID '10' and the password key "mypasswordkey", on the OSPFv2 interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ip ospf authentication hmac-sha-1 key-id 10 key mypasswordkey
```

History

Release	Command History
08.0.70	This command was introduced.

ip ospf authentication key-activation-wait-time

Configures the time before an authentication key change is activated for an Open Shortest Path First version 2 (OSPFv2) interface.

Syntax

ip ospf authentication key-activation-wait-time *wait-time*

no ip ospf authentication key-activation-wait-time *wait-time*

Parameters

wait-time

Specifies the time before an authentication key change takes place. The wait time can be set from 0 through 14400 seconds.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the wait time before an authentication key change takes place on the interface to which you are connected.

The **no** form of the command resets the wait time to the default of 300 seconds.

Examples

The following example sets the wait time before an authentication key change to 600 seconds on the OSPFv2 interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ip ospf authentication key-activation-wait-time 600
```

History

Release	Command History
08.0.70	This command was introduced.

ip ospf authentication keychain

Configures Open Shortest Path First version 2 (OSPFv2) authentication using the keychain authentication module.

Syntax

ip ospf authentication keychain *keychain-name*

no ip ospf authentication keychain *keychain-name*

Parameters

keychain-name

Specifies the name of the keychain that OSPFv2 uses to authenticate the packets.

Modes

Interface subtype configuration mode

Usage Guidelines

The keychain authentication module provides the OSPFv2 protocol the option to automatically change the key ID and cryptographic algorithm without manual intervention.

With this configuration, OSPFv2 requests the keychain authentication module for all active keys in the keychain and selects the keys for sending and accepting the packets.

The **no** form of the command removes keychain authentication from the OSPFv2 interface configuration.

Examples

The following example configures OSPFv2 to use the keychain authentication module with the "xtreme" keychain.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-11)# ip ospf authentication keychain xtreme
```

History

Release	Command History
08.0.70	This command was introduced.

ip ospf authentication plain-text

Configures simple password-based authentication for Open Shortest Path First version 2 (OSPFv2).

Syntax

ip ospf authentication plain-text *key-string*

no ip ospf authentication plain-text *key-string*

Command Default

Password-based authentication is disabled by default.

Parameters

key-string

Sets the authentication password. The key string is unencrypted and appended to the outgoing message.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset simple password-based authentication on the OSPFv2 interface to which you are connected.

The **no** form of the command removes plain text authentication from the OSPFv2 interface configuration.

Examples

The following example configures the authentication password "mystring" in plain text on the OSPFv2 interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-11)# ip ospf authentication plain-text mystring
```

History

Release	Command History
08.0.70	This command was introduced.

ip ospf bfd

Enables Bidirectional Forwarding Detection (BFD) sessions and configures BFD session parameters for an Open Shortest Path First Version 2 (OSPFv2) interface.

Syntax

ip ospf bfd[**disable**|**min-tx***transmit-time***min-rx***receive-time***multiplier***number*|**passive**]

no ip ospf bfd[**disable**|**min-tx***transmit-time***min-rx***receive-time***multiplier***number*|**passive**]

Command Default

BFD is not configured for OSPF.

Parameters

disable

Disables BFD on the interface.

min-tx*transmit-time*

Specifies the interval, in milliseconds, a device waits to send control packets to BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

min-rx*receive-time*

Specifies the interval, in milliseconds, a device waits to receive control packets from BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

multiplier*number*

Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD determines that the connection to that peer is down. Valid values range from 2 through 50. The default is 3.

passive

Specifies that the BFD session operates in passive mode.

Modes

Interface subtype configuration mode

Usage Guidelines

Using this command overrides global settings configured using the **bfd** command in OSPF router configuration mode.

If BFD is disabled on an interface using the **no ip ospf bfd** command, and BFD is configured globally for OSPFv2, the BFD session will come up on all the OSPFv2-enabled interfaces.

If BFD is disabled on an interface using the **ip ospf bfd disable** command, and BFD is configured globally for OSPFv2, the BFD session will not come up on all the specified OSPFv2-enabled interface where it has been disabled.

This command is supported for ICX 7850 devices only.

The **no** form of the command disables BFD sessions on the interface.

The **no ip ospf bfdmin-tx***transmit-time***min-rx***receive-time***multiplier***number* command removes configured BFD session parameters and restores the default parameters.

The **no ip ospf bfd passive** command removes BFD from the OSPF interface. To unconfigure passive mode for the interface, use the **ip ospf bfd** command.

Examples

The following example enables BFD for an OSPFv2-enabled Ethernet interface and sets the BFD session timer values.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# ip address 10.0.0.2/24
device(config-if-e40000-1/1/1)# ip ospf bfd
device(config-if-e40000-1/1/1)# ip ospf bfd min-tx 100 min-rx 300 multiplier 5
```

The following example enables BFD for an OSPFv2-enabled Ethernet interface and sets the BFD session to passive.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# ip address 10.0.0.2/24
device(config-if-e40000-1/1/1)# ip ospf bfd
device(config-if-e40000-1/1/1)# ip ospf bfd passive
```

The following example disables BFD for an OSPFv2-enabled Ethernet interface if it has been enabled. If BFD is then configured globally for OSPFv2, the BFD session will come up on all the OSPFv2-enabled interfaces.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# no ip ospf bfd
```

The following example disables BFD for an OSPFv2-enabled Ethernet interface if it has been enabled. If BFD is then configured globally for OSPFv2, the BFD session will not come up the specified interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# ip ospf bfd disable
```

History

Release version	Command history
08.0.90	This command was introduced.

ip ospf cost

Configures cost for a specific interface.

Syntax

ip ospf cost *value*

no ip ospf cost

Command Default

Cost value is 1.

Parameters

value

Cost value. Valid values range from 1 through 65535. The default is 1.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the OSPFv2 cost on the interface. If the cost is not configured with this command, OSPFv2 calculates the value from the reference and interface bandwidths.

You can modify the cost to differentiate between 100 Mbps, 1 Gbps, and 10 Gbps. The default cost is calculated by dividing 100 million by the bandwidth. For 10 Mbps links, the cost is 10. The cost for 100 Mbps, 1 Gbps, and 10 Gbps links is 1, because the speed of 100 Mbps and 10 Gbps was not in use at the time the OSPF cost formula was devised.

The **no** form of the command disables the configured cost.

Examples

The following example sets the cost to 600 on a specific OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-11)# ospf cost 600
```

ip ospf database-filter

Configures filters for different types of outgoing Link State Advertisements (LSAs).

Syntax

ip ospf database-filter all out

ip ospf database-filter all-external { **allow-default out** | **allow-default-and-type-4 out** | **out** }

ip ospf database-filter all-summary-external { **allow-default out** | **allow-default-and-type-4 out** | **out** }

no ip ospf database-filter all out

no ip ospf database-filter all-external

no ip ospf database-filter all-summary-external

Command Default

All filters are disabled.

Parameters

all out
Blocks all LSAs.

all-external
Blocks all external LSAs.

allow-default-and-type-4
Allows default-route LSAs and Type 4 LSAs, but block all other LSAs.

allow-default-out
Allows default-route LSAs, but block all other LSAs.

out
Filters outgoing LSAs.

all-summary-external
Blocks all summary (Type 3) and external (type 5) LSAs.

Modes

Interface subtype configuration mode

Usage Guidelines

By default, the device floods all outbound LSAs on all the OSPFv2 interfaces within an area. You can configure a filter to block outbound LSAs on an OSPF interface. This feature is particularly useful when you want to block LSAs from some, but not all, of the interfaces attached to the area. When enabled, this command blocks the specified outgoing LSAs on the interface. Some cases where you might want to enable filters are:

- To control the information being advertised to the network.

- To use a passive router for debugging only.

Enter **no ip ospf database-filter** followed by the appropriate operands to disable this configuration.

NOTE
You cannot block LSAs on virtual links and LSA filtering is not supported on sham links.

Examples

The following example applies a filter to block flooding of all LSAs on a specific OSPF Ethernet interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip ospf database-filter all-out
```

ip ospf dead-interval

Configures the neighbor dead interval, which is the number of seconds that a neighbor router waits for a hello packet from the device before declaring the router down.

Syntax

ip ospf dead-interval *interval*

no ip ospf dead-interval

Command Default

The specified time period is 40 seconds.

Parameters

interval

Dead interval in seconds. Valid values range from 3 through 65535 seconds. The default is 40.

Modes

Interface subtype configuration mode

Usage Guidelines

If you change the dead interval, the hello interval is automatically changed to a value that is one fourth that of the new dead interval, unless the hello interval is also explicitly configured using the **ip ospf hello-interval** command.

The recommended setting is that:

- The dead interval is four times that of the hello interval.
- The hello interval is ¼ times that of the dead interval.
- If the OSPF hello interval and dead interval are set to more aggressive levels than 1:4 seconds respectively, the OSPF protocol might flap when the **write memory** command is used or in the case of any high CPU.

The **running-config** command displays only explicitly configured values of the hello interval, which means that a value that was automatically changed as the result of a dead-interval change is not displayed.

The **no** form of the command restores the default value.

Examples

The following example sets the dead interval to 200 on a specific OSPFv2 virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ip ospf dead-interval 200
```

ip ospf hello-interval

Configures the hello interval, which is the length of time between the transmission of hello packets that this interface sends to neighbor routers.

Syntax

ip ospf hello-interval *interval*

no ip ospf hello-interval

Command Default

The default value is 10 seconds.

Parameters

interval

Hello interval in seconds. Valid values range from 1 through 65535.

Modes

Interface subtype configuration mode

Usage Guidelines

If you change the hello interval, the dead interval is automatically changed to a value that is four times that of the new hello interval, unless the dead interval is also explicitly configured using the **ip ospf dead-interval** command.

The recommended setting is that:

- The dead interval is four times that of the hello interval.
- The hello interval is ¼ times that of the dead interval.
- If the OSPF hello interval and dead interval are set to more aggressive levels than 1:4 seconds respectively, the OSPF protocol might flap when the **write memory** command is used or in the case of any high CPU.

The **running-config** command displays only explicitly configured values of the dead interval, which means that a value that was automatically changed as the result of a hello-interval change is not displayed.

The **no** form of the command restores the default value.

Examples

The following example sets the hello interval to 50 on a specific OSPFv2 virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ip ospf hello-interval 50
```

ip ospf mtu-ignore

Enables or disables maximum transmission unit (MTU) match checking.

Syntax

ip ospf mtu-ignore

no ip ospf mtu-ignore

Command Default

Enabled

Modes

Interface subtype configuration mode

Usage Guidelines

In default operation, the IP MTU on both sides of an OSPFv2 link must be the same, and a check of the MTU is performed when Hello packets are first exchanged.

The **no** form of the command re-enables MTU-match checking on a specific interface if it has been disabled.

Examples

The following example disables MTU-match checking on a specific OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ip ospf mtu-ignore
```

The following example re-enables MTU-match checking on a specific OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# no ip ospf mtu-ignore
```

ip ospf network

Configures the network type for the interface. Point-to-point can support unnumbered links, which requires less processing by OSPF.

Syntax

ip ospf network { **broadcast** | **non-broadcast** | **point-to-point** }

no ip ospf network

Command Default

Network type is broadcast.

Parameters

broadcast

Network type is broadcast.

non-broadcast

Network type is non-broadcast. An interface can be configured to send OSPF traffic to its neighbor as unicast packets rather than multicast packets.

point-to-point

Network type is point-to-point.

Modes

Interface subtype configuration mode

Usage Guidelines

On a non-broadcast interface, the devices at either end of the interface must configure non-broadcast interface type and the neighbor IP address. There is no restriction on the number of devices sharing a non-broadcast interface.

To configure an OSPF interface as a non-broadcast interface, the feature must be enabled on a physical interface or a VE, following the **ip ospf area** statement, and then specify the IP address of the neighbor in the OSPF configuration. The non-broadcast interface configuration must be done on the OSPF devices at either end of the link.

The **no** form of the command removes the network-type configuration.

Examples

The following example configures an OSPFv2 point-to-point link on a specific OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ip ospf network point-to-point
```

The following example configures an OSPFv2 broadcast link on a specific OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ip ospf network broadcast
```

ip ospf passive

Sets a specific OSPFv2interface to passive.

Syntax

ip ospf passive

no ip ospf passive

Command Default

All OSPF interfaces are active.

Modes

Interface subtype configuration mode

Usage Guidelines

When you configure an OSPF interface to be passive, that interface does not send or receive OSPF route updates. Since a passive interface does not send or receive route information, the interface is in effect a stub network.

You might want to set an interface to passive mode if:

- You are planning to use the router mostly for debugging purposes.
- The router is a stub and does not route traffic.

The **no** form of the command sets an interface back to active.

Examples

The following example sets a specific OSPFv2 virtual Ethernet (VE) interface to passive.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ip ospf passive
```

ip ospf priority

Configures priority for designated router (DR) election.

Syntax

ip ospf priority *value*

no ip ospf priority

Command Default

The default value is 1.

Parameters

value

Priority value. Valid values range from 0 through 255.

Modes

Interface subtype configuration mode

Usage Guidelines

The OSPFv2 router assigned the highest priority becomes the designated router, and the OSPFv2 router with the second-highest priority becomes the backup router.

If you set the priority to 0, the device does not participate in DR and BDR election.

The **no** form of the command restores the default value.

Examples

The following example sets a priority of 10 for the OSPFv2 router that is connected to an OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf priority 10
```

ip ospf retransmit-interval

Configures the retransmit interval. The retransmit interval is the time between Link-State Advertisement (LSA) retransmissions to adjacent routers for a given interface.

Syntax

ip ospf retransmit-interval *interval*

no ip ospf retransmit-interval

Command Default

The interval is 5 seconds.

Parameters

interval

Retransmit interval in seconds. Valid values range from 0 through 3600 seconds.

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command resets the retransmit interval to its default.

Examples

The following example sets the retransmit interval to 8 for all OSPFv2 devices on an OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ip ospf retransmit-interval 8
```

ip ospf transmit-delay

Configures transmit delay for link-update packets. The transmit delay is the estimated time required for OSPFv2 to send link-state update packets on the interface to which you are connected.

Syntax

ip ospf transmit-delay *value*

no ip ospf transmit-delay

Command Default

The transmit delay is set to 1 second.

Parameters

value

Transmit delay in seconds. Valid values range from 0 through 3600 seconds.

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command restores the default value.

Examples

The following example sets a transmit delay of 25 seconds for devices on a specific OSPFv2 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ip ospf transmit-delay 25
```

ip pcp-remark

Enables remarking of the priority code point (PCP) field in the VLAN header for tagged packets received.

Syntax

ip pcp-remark *pcp-value*

no ip pcp-remark *pcp-value*

Command Default

PCP remarking is disabled.

Parameters

pcp-value

Specifies the PCP value ranges you are remarking.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command disables PCP remarking.

In Interface configuration mode, the command enables PCP remarking for each port. The command can be configured only on Layer 2 ports. The configuration can be done on a physical port, LAG, or VE port.

Examples

The following example enables remarking of received tagged packets on a specific port when the PCP bit value is 5.

```
device(config)# interface ethernet1/1/1
device(config-if-e1000-1/1/1)# ip pcp-remark 5
```

History

Release version	Command history
08.0.95	This command was modified to remove global configuration.

ip pim

Configures PIM in Dense mode on an interface.

Syntax

ip pim [**passive**]

no ip pim [**passive**]

Command Default

PIM is not enabled.

Parameters

passive

Specifies PIM passive mode on the interface.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command disables PIM.

You must enable PIM globally before you enable it on an interface.

You must enable PIM on an interface before you can configure PIM passive on it.

Support for the **ip pim passive** command is implemented at Layer 3 interface (Ethernet or virtual Ethernet) level.

Because the loopback interfaces are never used to form PIM neighbors, the **ip pim passive** command is not supported on loopback interfaces.

The sent and received statistics of a PIM Hello message are not changed for an interface while it is configured as PIM passive.

Examples

This example enables PIM globally, then enables it on interface 3.

```
Device(config)# router pim
Device(config-pim-router)# interface ethernet 1/1/3
Device(config-if-e10000-1/1/3)# ip address 207.95.5.1/24
Device(config-if-e10000-1/1/3)# ip pim
```

This example enables PIM passive on an interface.

```
Device(config)# router pim
device(config-pim-router)#exit
Device(config)#interface ethernet 2
Device(config-if-e1000-2)#ip pim
Device(config-if-e1000-2)#ip pim passive
Device(config-if-e1000-2)#exit
Device(config)#interface ve 2
Device(config-vif-2)#ip pim-sparse
Device(config-vif-2)#ip pim passive
Device(config-vif-2)#exit
```

ip pim border

Configures PIM parameters on an interface on a PIM Sparse border.

Syntax

ip pim border

no ip pim border

Command Default

The interface is not configured as a border device.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command removes the boundary on a PIM-enabled interface.

You can configure this command only in a PIM Sparse domain, that is, you must configure the **ip pim-sparse** command before you configure the **ip pim border** command.

Examples

This example adds an IPv4 interface to port 1/2/2, enables PIM Sparse on the interface and configures it as a border device.

```
Device(config)# interface ethernet 1/2/2
Device(config-if-e10000-1/2/2)# ip address 207.95.7.1 255.255.255.0
Device(config-if-e10000-1/2/2)# ip pim-sparse
Device(config-if-e10000-1/2/2)# ip pim border
```

ip pim dr-priority

Configures the designated router (DR) priority on IPv4 interfaces.

Syntax

ip pim dr-priority *priority-value*

no ip pim dr-priority *priority-value*

Command Default

The default DR priority value is 1.

Parameters

priority-value

Specifies the DR priority value as an integer. The range is 0 through 65535.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command restores the default DR priority value, 1.

You must enable PIM globally before you enable it on an interface.

You can configure the **ip pim dr-priority** command in either Dense mode (DM) or Sparse mode (SM).

If more than one device has the same DR priority on a subnet (as in the case of default DR priority on all), the device with the numerically highest IP address on that subnet is elected as the DR.

The DR priority information is used in the DR election only if all the PIM devices connected to the subnet support the DR priority option. If at least one PIM device on the subnet does not support this option, the DR election falls back to the backwards compatibility mode in which the device with the numerically highest IP address on the subnet is declared the DR regardless of the DR priority values.

Examples

This example configures a DR priority value of 50.

```
device(config)# interface ethernet 1/3/24
device(config-if-e10000-1/3/24)# ip pim dr-priority 50
```

This example configures a DR priority value of 50.

```
device(config)# interface ethernet 1/3/24
device(config-if-e10000-1/3/24)# ip pim dr-priority 50
```

ip pim neighbor-filter

Determines which devices can become PIM neighbors.

Syntax

ip pim neighbor-filter{*acl-name*|*acl-id*}

no ip pim neighbor-filter{*acl-name*|*acl-id*}

Command Default

Neighbor filtering is not applied on the interface.

Parameters

acl-name

Specifies an ACL as an ASCII string.

acl-id

Specifies either a standard ACL as a number in the range 1 to 99 or an extended ACL as a number in the range 100 to 199.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command removes any neighbor filtering applied on the interface.

You must enable PIM globally before you enable it on an interface.

You can configure the **ip pim neighbor-filter** command in either Dense mode (DM) or Sparse mode (SM).

Configure the **access-list** command to create an access-control list (ACL)that specifies the devices you want to permit and deny participation in PIM

Examples

This example prevents the host from becoming a PIM neighbor on interface Ethernet 1/3/24.

```
device# configure terminal
device(config)# interface ethernet 1/3/24
device(config-if-e10000-1/3/24)# ip pim neighbor-filter
```

This example configures an ACL named 10 to deny a host and then prevents that host, 10.10.10.2, identified in that ACL from becoming a PIM neighbor on interface Ethernet 1/3/24.

```
device(config)# ip access-list standard  10
device(config-std-ipacl-10)# deny  host 10.10.10.2
device(config-std-ipacl-10)# permit any
device(config-std-ipacl-10)# exit
device(config)# interface ethernet 1/3/24
device(config-if-e10000-1/3/24)# ip pim neighbor-filter 10
```

History

Release version	Command history
08.0.20a	This command was introduced.

ip pim-sparse

Enables PIM Sparse on an interface that is connected to the PIM Sparse network.

Syntax

ip pim-sparse [**passive**]

no ip pim-sparse [**passive**]

Command Default

PIM Sparse is not enabled on the interface.

Parameters

passive

Specifies PIM passive mode on the interface.

Modes

Interface configuration mode

Usage Guidelines

You must enable PIM Sparse globally before you enable it on an interface.

If the interface is on the border of the PIM Sparse domain, you also must configure the **ip pim border** command.

The **no ip pim-sparse** command disables PIM Sparse.

The **no ip pim-sparse passive** command disables PIM passive mode on the interface.

Examples

The following example adds an IP interface to port 1/2/2, then enable PIM Sparse on the interface.

```
device# configure terminal
device(config)# interface ethernet 1/2/2
device(config-if-e10000-1/2/2)# ip address 207.95.7.1 255.255.255.0
device(config-if-e10000-1/2/2)# ip pim-sparse
```

ip pimsm-snooping

Enables PIM Sparse mode (SM) traffic snooping globally.

Syntax

ip pimsm-snooping

no ip pimsm-snooping

Command Default

PIM SM traffic snooping is disabled.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

The **no** form of this command disables PIM SM traffic snooping.

The device must be in passive mode before it can be configured for PIM SM snooping.

Use PIM SM snooping only in topologies where multiple PIM sparse routers connect through a device. PIM SM snooping does not work on a PIM dense mode router that does not send join messages and on which traffic to PIM dense ports is stopped. A PIM SM snooping-enabled device displays a warning if it receives PIM dense join or prune messages.

When PIM SM snooping is enabled globally, you can override the global setting and disable it for a specific VLAN.

Examples

This example shows how to enable PIM SM traffic snooping.

```
Device(config)# ip pimsm-snooping
```

This example overrides the global setting and disable PIM SM traffic snooping on VLAN 20.

```
Device(config)# vlan 20
Device(config-vlan-20)# no ip pimsm-snooping
```

ip policy route-map

Enables policy-based routing (PBR).

Syntax

ip policy route-map*map-name*

no ip policy route-map*map-name*

Command Default

PBR is not enabled.

Parameters

map-name

Specifies the name of the route map.

Modes

Global configuration mode

Interface configuration mode

Virtual interface configuration mode

Usage Guidelines

This command can be used to enable PBR globally on all interfaces or on a specific interface.

The **no** form of the command disables PBR.

Examples

The following example enables PBR globally.

```
device(config)# route-map map1
device(config-routemap map1)# exit
device(config)# ip policy route-map map1
```

The following example enables PBR on a specific interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip policy route-map map1
```

ip prefix-list

Configures a RIP routing prefix list that can permit or deny specific routes. The prefix list can be applied globally or to individual interfaces, where they may apply to incoming (learned) our outgoing (advertised) routes.

Syntax

ip prefix-list *name* [**seq** *number*] { **permit** | **deny** } { *source-ip-address / L* }

ip prefix-list *name* **description** *string*

no ip prefix-list *name* [**seq** *number*] { **permit** | **deny** } { *source-ip-address / L* }

no ip prefix-list *name* **description** *string*

Command Default

By default, routes that do not match a prefix list are learned or advertised. To prevent a route from being learned or advertised, you must configure and apply a prefix list to deny the route.

Parameters

name
: Identifies the prefix list.

description *string*
: Provides information describing the named prefix list in an ASCII string.

seq *number*
: Specifies an optional sequence number for the named prefix list.

permit
: Indicates that designated routes will be allowed; that is, either learned or advertised, depending on how the prefix list is applied.

deny
: Indicates that designated routes will be denied; that is, will not be learned or will not be advertised, depending on how the prefix list is applied.

source-ip-address / L
: Designates a specific route, based on its IP address prefix and mask length.

[**ge** *value*] [**le** *value* **]**
: The keyword **le** indicates the maximum prefix length that can be matched. The keyword **ge** indicates minimum prefix length that can match. Possible values for ge (greater than or equal to) and le (less than or equal to) are 1 through 32. The **ge** and **le** values can be used separately or together.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the prefix list.

A route is defined by the destination's IP address and network mask. Because the default action is permit, all other routes (routes not explicitly permitted or denied by the filters) can be learned or advertised.

Prefix lists can be applied to RIP globally using the separate **prefix-list** command or at the interface level using the separate **ip rip prefix-list** command.

Examples

The following example creates four prefix lists. Three of the prefix lists permit a route for a different network. The last prefix list denies a route for one network. The routes are defined but not applied in the example.

```
device# configure terminal
device(config)# ip prefix-list list1 permit 10.53.4.1 255.255.255.0
device(config)# ip prefix-list list2 permit 10.53.5.1 255.255.255.0
device(config)# ip prefix-list list3 permit 10.53.6.1 255.255.255.0
device(config)# ip prefix-list list4 deny 10.53.7.1 255.255.255.0
```

ip-proto

Configures an IP protocol-based VLAN.

Syntax

ip-proto [**name** *string*]

no ip-proto [**name** *string*]

Command Default

An IP protocol-based VLAN is not configured.

Parameters

name *string*

Specifies the name of the IP protocol VLAN. The maximum length of the string is 32 characters.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command removes the IP protocol-based VLAN.

Examples

The following example configures the IP protocol-based VLAN.

```
device (config)# vlan 10
device(config-vlan-10)# ip-proto name IP_Prot_VLAN
```

ip proxy-arp

Enables IP proxy ARP globally.

Syntax

ip proxy-arp

no ip proxy-arp

Command Default

Proxy ARP is disabled by default on Layer 3 switches.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

Proxy ARP allows a Layer 3 switch to answer ARP requests from devices on one network on behalf of devices in another network. Because ARP requests are MAC-layer broadcasts, they reach only the devices that are directly connected to the sender of the ARP request. Thus, ARP requests do not cross routers.

An ARP request from one subnet can reach another subnet when both subnets are on the same physical segment (Ethernet cable), because MAC-layer broadcasts reach all the devices on the segment.

This feature is not supported on Layer 2 switches.

The **no** form of the command disables IP proxy ARP.

Examples

The following example enables IP proxy ARP globally.

```
device(config)# ip proxy-arp
```

The following example enables proxy ARP on port 1/2/1.

```
device# configure terminal
device(config)# interface ethernet 1/2/1
device(config-if-e1000-1/2/1)# ip proxy-arp
```

ip proxy-arp (Interface)

Enables IP proxy ARP on an interface.

Syntax

ip proxy-arp { **enable** | **disable** }

no ip proxy-arp { **enable** | **disable** }

Command Default

IP proxy ARP is disabled.

Parameters

enable

Enables IP proxy ARP on an interface.

disable

Disables IP proxy ARP on an interface.

Modes

Interface configuration mode

Usage Guidelines

Configuring proxy ARP at the Interface level overrides the global configuration.

Proxy ARP allows a Layer 3 switch to answer ARP requests from devices on one network on behalf of devices in another network. Because ARP requests are MAC-layer broadcasts, they reach only the devices that are directly connected to the sender of the ARP request. Thus, ARP requests do not cross routers.

An ARP request from one subnet can reach another subnet when both subnets are on the same physical segment (Ethernet cable), because MAC-layer broadcasts reach all the devices on the segment.

This feature is not supported on RUCKUS Layer 2 switches.

The **no** form of the command enables or disables IP proxy ARP.

Examples

The following example enables IP proxy ARP on an interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip proxy-arp enable
```

The following example disables IP proxy ARP on an interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip proxy-arp disable
```

ip rarp

Enables IP Reverse Address Resolution Protocol (RARP).

Syntax

ip rarp

no ip rarp

Command Default

RARP is enabled by default.

Modes

Global configuration mode

Usage Guidelines

RARP allows an IP host that does not have a means of storing its IP address across power cycles or software reloads to query a directly-attached router for an IP address. RARP is enabled by default. However, you must create a RARP entry for each host that will use the Layer 3 switch for booting.

The **no** form of the command disables IP RARP.

Examples

The following example disables IP RARP.

```
device(config)# no ip rarp
```

ip redirect

Enables IPv4 redirect messages on individual Virtual Ethernet (VE) interface.

Syntax

ip redirect

no ip redirect

Command Default

Redirect is not enabled.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables IPv4 redirect messages.

NOTE
The command is supported only on VE interface configuration mode.

Examples

The following example enables ICMP redirect on a VE interface.

```
device(config-vlan-10)# interface ve 10
device(config-vif-10)# ip redirect
```

ip rip

Configures Routing Information Protocol at the interface level. RIP must first be enabled globally on the device.

Syntax

ip rip { **v1-only** | **v1-compatible-v2** | **v2-only** }

no ip rip { **v1-only** | **v1-compatible-v2** | **v2-only** }

Command Default

By default, RIP is not configured on any interface

Parameters

v1-only

Configures the interface for RIP Version.

v1-compatible-v2

Configures the interface for RIP Version 1 with RIP Version 2 compatibility.

v2-only

Configures the interface for RIP Version 2.

Modes

Interface configuration mode.

Usage Guidelines

The **no** form of the command disables RIP on the interface.

RIP must first be configured globally. Refer to the **router rip** command. Then you must configure individual interfaces, including physical interfaces as well as virtual routing interfaces, with the **ip rip** command.

Examples

The following example configures RIP Version 1 on Ethernet interface 1/2/3 (device 1/slot 2/interface 3).

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e01000-1/2/3)# ip rip v1-only
```

The following examples removes RIP configuration from the same interface.

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e01000-1/2/3)# no ip rip v1-only
```

ip rip metric-offset

Increases the cost metric an interface applies to learned or advertised RIP routes.

Syntax

ip rip metric-offset *num* { **in** | **out** }

no ip rip metric-offset *num* { **in** | **out** }

Command Default

By default, the interface adds one to the route metric before storing the route.

Parameters

num
: A decimal number from 1 through 16 that the interface adds to the cost metric for learned or advertised RIP routes.

in
: Applies cost to routes the interface learns from RIP neighbors.

out
: Applies cost to routes the interface advertises to RIP neighbors.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command removes the added cost from RIP routes learned or advertised on the interface.

Routes with a higher cost are less likely to be used. You can prevent the RIP router from using a route learned on a particular interface by adding a cost metric of 16 on the interface.

Examples

The following example adds 5 to the cost metric for routes advertised on Ethernet interface 1/2/3 (Device 1/Slot 2/Interface 3).

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e1000-1/2/3)# ip rip metric-offset 5 out
```

The following example returns the advertised route metric to default (1) for the interface in the previous example.

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e1000-1/2/3)# no ip rip metric-offset 5 out
```

The following example prevents the RIP router from using RIP routes learned on Ethernet interface 1/2/3.

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e1000-1/2/3)# ip rip metric-offset 16 in
```

ip rip prefix-list

Applies a pre-configured prefix-list to a RIP interface.

Syntax

ip rip prefix-list *name* { **in** | **out** }

no ip rip prefix-list *name* { **in** | **out** }

Command Default

By default, all routes are learned from and advertised to RIP neighbors.

Parameters

name

Designates the RIP prefix list to be applied.

in

Applies the designated prefix list as a filter to incoming routes; that, is to routes learned from RIP neighbors.

out

Applies the designated prefix list as a filter to outgoing routes; that, is to routes advertised to RIP neighbors.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command removes the prefix list from the interface.

Prefix lists must be configured with the **ip prefix-list** command before they are applied.

Prefix lists can be applied globally with the **prefix-list** command.

Examples

The following example applies the prefix list named list2 to RIP routes learned on Ethernet interface 1/1/2 and a different prefix list, list 3, to RIP routes advertised on the same interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000-1/1/2)# ip rip prefix-list list2 in
device(config-if-e1000-1/1/2)# ip rip prefix-list list3 out
```

ip rip route-map

Applies a pre-configured route map to a RIP interface.

Syntax

ip rip route-map *name* { **in** | **out** }

no ip rip route-map

Parameters

name
: Specifies the route-map to be applied.

in
: Applies the route-map as an inbound filter; that is, it applies to routes learned from RIP neighbors.

out
: Applies the route-map as an outbound filter; that is, it applies to routes advertised to RIP neighbors.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command removes the route-map from the interface.

An access control list (ACL) or a prefix list can be applied as a route-map using this command.

Examples

The following command applies the route-map named map1 to filter RIP routes learned on Ethernet interface 1/1/2.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000-1/1/2)# ip rip route-map map1 in
```

ip route

Adds a static route to the IP routing tables.

Syntax

ip route[**vrf***vrf-name*]*dest-ip-addr*[**next-hop-vrf***vrf-name*|**default-vrf**]*next-hop-addr*[*metric*][**bfd**][**distance***distance*][**name***string*][**tag***tag*]

ip route[**vrf***vrf-name*]*dest-ip-addr*{**ethernet***unit/slot/port*|**lag***lag-id*|**tunnel***tunnel-id*|**ve***vlan-id*}[*metric*][**distance***distance*][**name***string*] [**tag***tag*]

ip route[**vrf***vrf-name*]*dest-ip-addr***null0**[**distance***distance*][**name***string*][**tag***tag*]

no ip route[**vrf***vrf-name*]*dest-ip-addr*[**next-hop-vrf***vrf-name*|**default-vrf**]*next-hop-addr*[*metric*][**bfd**][**distance***distance*][**name***string*] [**tag***tag*]

no ip route[**vrf***vrf-name*]*dest-ip-addr*{**ethernet***unit/slot/port*|**lag***lag-id*|**tunnel***tunnel-id*|**ve***vlan-id*}[*metric*][**distance***distance*][**name***string*] [**tag***tag*]

no ip route[**vrf***vrf-name*]*dest-ip-addr***null0**[**distance***distance*][**name***string*][**tag***tag*]

Parameters

vrf*vrf-name*

Specifies the VRF associated with the destination IPv4 address.

dest-ip-addr

Specifies the destination IPv4 address and mask in the format A.B.C.D/L (where "L" is the prefix-length of the mask) or A.B.C.D P.Q.R.S (where "P.Q.R.S" is the mask value).

next-hop-vrf*vrf-name*

Specifies the next-hop VRF.

default-vrf

Specifies the next-hop default VRF.

next-hop-addr

Specifies the IPv4 address of the next hop.

metric

Specifies the cost metric of the route. Valid values range from 1 through 16. The default is 1.

bfd

Enables Bidirectional Forwarding Detection (BFD) for the IP static route.

distance*distance*

Specifies the administrative distance of the route. When comparing otherwise equal routes to a destination, a device prefers lower administrative distances over higher ones. Valid values range from 1 through 255. The default is 1. The value 255 makes the route unusable.

name*string*

Specifies the static route name. The maximum length of the name is 128 bytes.

tag*tag*

Specifies the tag value of the route to use for route filtering with a route map. Valid values range from 0 through 4294967295. The default is 0.

ethernet*unit/slot/port*
Specifies the destination Ethernet port.

lag*lag-id*
Specifies a LAG interface.

tunnel*tunnel-id*
Specifies the outgoing interface type as a tunnel.

ve*vlan-id*
Specifies the outgoing interface type as a VE.

null0
Configures the Layer 3 switch to drop IP packets to a specific network or host address by configuring a "null" (sometimes called "null0") static route for the address.

Modes

Global configuration mode

Usage Guidelines

For a default route, enter 0.0.0.0/0 as the destination IP address followed by the next-hop IP address. Physical or virtual interfaces cannot be used as next hops for a default route.

If you do not want to specify a next-hop IP address, you can instead specify a port or interface number on the device. If you specify an Ethernet port, the device forwards packets destined for the static route's destination network to the specified interface.

The port or virtual interface you use for the static route's next hop must have at least one IP address configured on it. The address does not need to be in the same subnet as the destination network.

When a tunnel is configured as the next hop for a static route, the tunnel must already be configured if the destination is a non-default VRF. In contrast, a tunnel can be designated as the next hop in the default VRF before it is configured. The default VRF is used when no VRF is specified in the command.

Use the **ip route bfd** command to create a BFD session.

The **ip route bfd** command is supported for ICX 7850 devices only.

The **no** form of the command followed by the route identifier removes a static route. If the static route includes a name, you must enter the **no** form of the command twice (once to remove the name and the second time to remove the route from the routing table).

Examples

The following example configures inter-VRF route leaking by specifying the next-hop VRF.

```
device(config)# ip route vrf 1 33.1.1.0/24 next-hop-vrf 2 131.1.1.3
```

The following example configures inter-VRF route leaking by specifying the outgoing interface of another VRF.

```
device(config)# ip route 32.32.32.32 255.255.255.255 ve 100
Info: Outgoing interface vrf red is different from route vrf default-vrf
```

The following example configures a static route to 10.95.7.0, using 10.95.6.157 as the next-hop gateway.

```
device(config)# ip route vrf 4 10.95.7.0/24 next-hop-vrf 6  10.95.6.157
```

The following example configures a default route through next-hop IP address 10.2.12.1.

```
device(config)# ip route 0.0.0.0/0  next-hop-vrf vrf5  10..2.12.1
```

The following example configures a static route with an Ethernet interface as the destination.

```
device(config)# ip route 10.128.2.69 255.255.255.0 ethernet 1/4/1
```

The following example configures a null static route to drop packets destined for network 10.157.22.x.

```
device(config)# ip route 10.157.22.0 255.255.255.0 null0
```

The following example configures tunnel 1 as the next-hop gateway. The tunnel is configured in the default VRF.

```
device(config)# ip route 10.1.1.0/24 tunnel 1
```

The following example configures tunnel 5 as the next-hop gateway in a non-default VRF, as long as the tunnel already exists.

```
device(config)# ip route vrf 1 10.1.5.0/24 tunnel 5
```

The following example configures BFD for an IP static route.

```
device(config)# ip route 10.10.7.0/24 10.10.6.157 bfd
```

History

Release version	Command history
08.0.90	This command was modified to add the **bfd** keyword.
08.0.95	This command was modified to add the **next-hop-vrf***vrf-name* and **default-vrf** options.

ip route bfd

Enables Bidirectional Forwarding Detection (BFD) and configures BFD session parameters for IP static routes.

Syntax

ip route bfd*nexthop-ip-addr*[**min-tx***transmit-time***min-rx***receive-time***multiplier***number*][**multi-hop***local-ip-address*][**passive**]

no ip route bfd*nexthop-ip-addr*[**min-tx***transmit-time***min-rx***receive-time***multiplier***number*][**multi-hop***local-ip-address*][**passive**]

Command Default

BFD is not configured for IP static routes.

Parameters

nexthop-ip-addr
: Specifies the next-hop IP address for the IP static route.

min-tx*transmit-time*
: Specifies the interval, in milliseconds, a device waits to send control packets to BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

min-rx*receive-time*
: Specifies the interval, in milliseconds, a device waits to receive control packets from BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

multiplier*number*
: Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD determines that the connection to that peer is down. Valid values range from 2 through 50. The default is 3.

multi-hop
: Specifies a multi-hop BFD session.

local-ip-address
: Specifies a local source IP address to use for the multi-hop BFD session.

passive
: Specifies that the BFD session operates in passive mode.

Modes

Address family IPv4 VRF configuration mode

Global configuration mode

Usage Guidelines

BFD must be configured individually for each static route.

This command is supported for ICX 7850 devices only.

The **no** form of the command removes the configured BFD session parameters.

Examples

The following example configures a BFD session on an IP static route and sets the BFD session parameters.

```
device# configure terminal
device(config)# ip route bfd 10.1.1.1
device(config)# ip route bfd 10.1.1.1 min-tx 100 min-rx 300 multiplier 5
```

The following example configures a BFD multi-hop session on an IP static route and sets the BFD session parameters.

```
device# configure terminal
device(config)# ip route bfd 10.1.1.1
device(config)# ip route bfd 10.1.1.1 multi-hop 10.2.2.2 min-tx 100 min-rx 300 multiplier 5
```

The following example sets a BFD multi-hop session as passive.

```
device# configure terminal
device(config)# ip route bfd 10.1.1.1
device(config)# ip route bfd 10.1.1.1 multi-hop 10.2.2.2 passive
```

The following example configures a BFD session for an IP static route in a non-default VRF instance.

```
device# configure terminal
device(config)# ip route vrf white bfd 10.2.2.2
```

History

Release version	Command history
08.0.90	This command was introduced.

ip route bfd holdover-interval

Configures the time interval for which the BFD session state is not conveyed to the static route application after the BFD session goes down. During this time period, the static route is not withdrawn from the route table manager (RTM).

Syntax

ip route bfd holdover-interval*time*

no ip route bfd holdover-interval*time*

Command Default

No holdover interval is configured.

Parameters

time

Specifies the BFD holdover interval in seconds. Valid values range from 3 through 150.

Modes

Global configuration mode

Usage Guidelines

If the holdover timer is configured, an IP static route does not immediately bring down a BFD session when it is notified that a BFD session has transitioned from up to down. The IP static route waits until the period of time configured for the holdover timer has expired. If BFD declares a session up before the configured period of time expires, no action is taken.

This command is supported for ICX 7850 devices only.

The **no** form of the command removes the configured BFD holdover interval for the IP static route and reverts to the default value of 0 so that no holdover interval is configured.

Examples

The following example sets the BFD holdover interval to 10 seconds for the IP static route.

```
device# configure terminal
device(config)# ip route bfd 10.1.1.1
device(config)# ip route bfd holdover-interval 10
```

History

Release version	Command history
08.0.90	This command was introduced.

ip route next-hop

Enables a device to use routes from a specified protocol to resolve a configured static route.

Syntax

ip route next-hop { **bgp** | **ospf** | **rip** }

no ip next-hop { **bgp** | **ospf** | **rip** }

Command Default

The device is not enabled to use routes from a specified protocol to resolve a configured static route.

Parameters

bgp

Configures the device to use iBGP and eBGP routes to resolve static routes.

ospf

Configures the device to use OSPF routes to resolve static routes.

rip

Configures the device to use RIP routes to resolve static routes.

Modes

Global configuration mode

Usage Guidelines

This command can be independently applied on a per-VRF basis. Connected routes are always used to resolve static routes.

The **no** form of the command disables the device to use routes from a specified protocol to resolve static routes.

Examples

The following example configures the device to use OSPF protocol to resolve static routes.

```
device(config)# ip route next-hop ospf
```

ip route next-hop-enable-default

Enables a device to use the default route (0.0.0.0/0) to resolve a static route.

Syntax

ip route next-hop-enable-default

no ip route next-hop-enable-default

Command Default

Device does not use the default route to resolve static route.

Modes

Global configuration mode

Usage Guidelines

This command can be independently applied on a per-VRF basis.

This command works independently with the ip route next-hop-recursion and ip route next-hop commands. If the default route is a protocol route, that protocol needs to be enabled to resolve static routes using the **ip route next-hop** command in order for static routes to resolve by this default route. If the default route itself is a static route, you must configure the **ip route next-hop-recursion** command to resolve other static routes by this default route.

The **no** form of the command disables the device to use the default route to resolve a static route.

Examples

The following example enables static route resolve by default route

```
device(config)# ip route next-hop-enable-default
```

ip route next-hop-recursion

Enables a device to use static routes to resolve another static route.

Syntax

ip route next-hop-recursion [*level*]

no ip route next-hop-recursion *level*

Command Default

The recursive static route next hop lookup is disabled.

Parameters

level

Specifies the number of levels of recursion allowed. Valid values are 1 to 10. The default value is 3.

Modes

Global configuration mode

Usage Guidelines

This command can be independently applied on a per-VRF basis..

The **no** form of the command disables the recursive static route next hop lookup.

Examples

The following example enables the device to use static routes to resolve another static route.

```
device(config)# ip route next-hop-recursion 5
```

ip router-id

Configures an IPv4 router ID.

Syntax

ip router-id *ipv4-address*

no ip router-id *ipv4-address*

Command Default

A router ID is not configured.

Parameters

ipv4-address

Specifies the IPv4 address. The default is the lowest IP address in use.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the configured IPv4 router ID.

Examples

The following example configures the IPv4 router ID.

```
device(config)# ip router-id 10.14.52.11
```

ip sg-access-group

Binds an ingress IPv4 access control list (ACL) meant for IP Source Guard (IPSG) ports (SG ACL) to a port or VLAN.

Syntax

ip sg-access-group *acl-name* **in** [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]

no ip sg-access-group *acl-name* **in** [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]

Parameters

acl-name
: Specifies the IPSG ACL to be bound to the interface.

in
: Applies the ACL to inbound traffic.

ethernet *unit/slot/port*
: Specifies the Ethernet interface and the interface ID in the unit/slot/port format.

to *unit/slot/port*
: Specifies a range of Ethernet interfaces.

lag *lag-id*
: Specifies the LAG virtual interface.

to *lag-id*
: Specifies a range of LAG IDs.

Modes

Interface configuration mode

VLAN configuration mode

Usage Guidelines

The **source-guard enable** command must be configured on the interface before an IPSG ACL can be bound to it.

An IPSG ACL cannot be bound to both an Ethernet interface and a VLAN on the same port simultaneously.

For Interface configuration mode, this command is supported only for Ethernet interfaces and VLAG interfaces.

The **no** form of the command unbinds the ACL from the interface.

Examples

The following example binds IPSG ACL sg-acl1 to port 1/1/2.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000/1/1/2)# source-guard enable
device(config-if-e1000/1/1/2)# ip sg-access-group sg-acl1 in
```

The following example unbinds the ACL.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000/1/1/2)# no ip sg-access-group sg-acl1 in
```

The following example binds an IPSG ACL for a VLAN interface.

```
device# configure terminal
device(config)# vlan 11
device(config-vlan-11)# source-guard enable
device(config-vlan-11)# ip sg-access-group sg-acl1 in
```

History

Release version	Command history
08.0.95	This command was introduced.

ip sg-access-list

Creates an IP Source Guard (IPSG) ACL.

Syntax

ip sg-access-list { *acl_name* }

no ip sg-access-list { *acl_name* }

Parameters

acl_name
Specifies the ACL to be defined.

Modes

Global configuration mode

Usage Guidelines

The following syntax is used to create **ip sg-access-list** filter statements:

device(config-sgacl-name)# **permit** { *protocol* **any** | **range** *port_range* **any** | **range** *port_range* }

The command supports only wildcard IP host and IP network addresses ("any any").

The command supports the following port range operators only if port ranges are available:

- eq
- gt
- lt
- neq

The command supports **permit** actions for the following protocols:

- esp
- gre
- icmp
- igmp
- ip
- ipv6
- ospf
- pim
- rsvp
- tcp
- udp

The command does not support **deny** actions, logging, mirroring, or DSCP.

The **source-guard enable** command must be configured on an interface before an IPSG ACL can be bound to the interface.

The **no** form of the command deletes the ACL.

Examples

The following example defines IP Source Guard ACL sg123 to allow all TCP traffic and all UDP traffic.

```
device# configure terminal
device(config)# ip sg-access-list sg123
device(config-sg-sg123)# permit tcp any any
device(config-sg-sg123)# permit udp any any
device(config-sg-sg123)# exit
device(config)#
```

The following example defines IP Source Guard ACL sg456 to allow TCP traffic destined for any port number from 100 through 200.

```
device# configure terminal
device(config)# ip sg-access-list sg456
device(config-sg-sg123)# permit tcp any range 100 200
device(config-sg-sg123)# exit
device(config)#
```

The following example binds IP Source Guard ACL sg-acl1 to port 1/1/2.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000/1/1/2)# source-guard enable
device(config-if-e1000/1/1/2)# ip sg-access-group sg-acl1
```

The following example unbinds the ACL.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000/1/1/2)# no ip sg-access-group sg-acl1
```

History

Release version	Command history
08.0.95	This command was introduced.

ip show-portname

Displays interface names in syslog messages.

Syntax

ip show-portname

no ip show-portname

Command Default

An interface slot number (if applicable), port number, and interface type are displayed when you display syslog messages.

Modes

Global configuration mode

Usage Guidelines

Syslog messages show the interface type, such as "ethernet", and so on. However, if the **ip show-portname** command is configured and a name has been assigned to the port, the port name replaces the interface type.

The **no** form of the command displays the interface slot number and port number in syslog messages.

Examples

The following example configures the display of the interface name in syslog messages.

```
device(config)# ip show-portname
```

ip show-service-number-in-log

Displays TCP or UDP port numbers instead of the port names.

Syntax

ip show-service-number-in-log

no ip show-service-number-in-log

Command Default

By default, the device displays TCP or UDP application information in named notation.

Modes

Global configuration mode

Usage Guidelines

When this command is enabled, the device displays 80 (the port number) instead of http (the well-known port name) in the output of show commands and other commands that contain application port information.

The **no** form of the command displays the TCP or UDP port name.

Examples

The following example sets the display of TCP or UDP port numbers instead of their names.

```
device(config)# ip show-service-number-in-log
```

ip show-subnet-length

Enables CIDR format for displaying network masks.

Syntax

ip show-subnet-length

no ip show-subnet-length

Command Default

By default, the CLI displays network masks in classical IP address format (example: 255.255.255.0).

Modes

Global configuration mode

Usage Guidelines

This command changes the displays to prefix format (CIDR format) (example: /18) on a Layer 3 switch or Layer 2 switch.

The **no** form of the command enables the display of network masks in classical IP address format.

Examples

The following example enables CIDR format for displaying network masks.

```
device(config)# ip show-subnet-length
```

ip source-route

Enables forwarding of IP source-routed packets.

Syntax

ip source-route

no ip source-route

Command Default

The Layer 3 switch forwards both types of source-routed (strict and loose) packets by default.

Modes

Global configuration mode

Usage Guidelines

A source-routed packet specifies the exact router path for the packet. The packet specifies the path by listing the IP addresses of the router interfaces through which the packet must pass on its way to the destination. The Layer 3 switch supports strict and loose types of IP source routing.

Strict source routing requires the packet to pass through only the listed routers. If the Layer 3 switch receives a strict source-routed packet but cannot reach the next hop interface specified by the packet, the Layer 3 switch discards the packet and sends an ICMP Source-Route-Failure message to the sender.

NOTE
The Layer 3 switch allows you to disable sending of the Source-Route-Failure messages.

Loose source routing requires that the packet pass through all of the listed routers but also allows the packet to travel through other routers, which are not listed in the packet.

The **no** form of the command disables forwarding of IP source-routed packets.

Examples

The following example disables forwarding of IP source-routed packets.

```
device# configure terminal
device(config)# no ip source-route
```

The following example reenables forwarding of IP source-routed packets.

```
device(config)# ip source-route
```

ip ssh encryption aes-only

Enables SSH AES encryption and disables support for 3des-cbc.

Syntax

ip ssh encryption aes-only

no ip ssh encryption aes-only

Command Default

The 3des-cbc encryption is enabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the AES encryption support.

Examples

The following example shows how to enable AES encyrption.

```
device(config)# ip ssh encryption aes-only.
```

ip ssh encryption disable-aes-cbc

Disables the Advanced Encryption Standard - Cipher-Block Chaining (AES-CBC) encryption mode for the Secure Shell (SSH) protocol.

Syntax

ip ssh encryption disable-aes-cbc

no ip ssh encryption disable-aes-cbc

Command Default

If JITC is enabled, only AES-CTR encryption mode is supported and AES-CBC mode is disabled by default. In the standard mode, the AES-CBC encryption mode is enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command enables the AES-CBC encryption mode.

Examples

The following example disables the AES-CBC encryption mode.

```
device(config)#  ip ssh encryption disable-aes-cbc
```

History

Release version	Command history
08.0.20a	This command was introduced.

ip ssh interactive-authentication

Configures the keyboard-interactive authentication.

Syntax

ip ssh interactive-authentication { **yes** | **no** }

no ip ssh interactive-authentication { **yes** | **no** }

Command Default

Keyboard-interactive authentication is not enabled.

Parameters

yes

Enables keyboard-interactive authentication.

no

Disables keyboard-interactive authentication.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables keyboard-interactive authentication.

Examples

The following example enables keyboard-interactive authentication.

```
device(config)# ip ssh interactive-authentication yes
```

ip ssh key-authentication

Configures DSA or RSA challenge-response authentication.

Syntax

ip ssh key-authentication { **yes** | **no** }

no ip ssh key-authentication { **yes** | **no** }

Command Default

DSA or RSA challenge-response authentication is enabled by default.

Parameters

yes

Enables DSA or RSA challenge-response authentication. The default is **yes**.

no

Disables DSA or RSA challenge-response authentication.

Modes

Global configuration mode

Usage Guidelines

After the SSH server on the device negotiates a session key and encryption method with the connecting client, user authentication takes place. The implementation of SSH supports DSA or RSA challenge-response authentication and password authentication. You can deactivate one or both user authentication methods for SSH. Note that deactivating both authentication methods disables the SSH server entirely.

With DSA or RSA challenge-response authentication, a collection of clients' public keys are stored on the device. Clients are authenticated using these stored public keys. Only clients that have a private key that corresponds to one of the stored public keys can gain access to the device using SSH.

The **no** form of the command disables DSA or RSA challenge-response authentication.

Examples

The following example enables DSA or RSA challenge-response authentication.

```
device(config)# ip ssh key-authentication
```

ip ssh key-exchange-method

Configures the key-exchange methods that can be used to establish an SSH connection.

Syntax

ip ssh key-exchange-method { **dh-group14-sha256** }

no ip ssh key-exchange-method { **dh-group14-sha256** }

Command Default

By default, the diffie-hellman-group14-sha256 method is prioritized as the key-exchange method. The diffie-hellman-group14-sha1 option is always available and cannot be removed.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command deactivates the specified key-exchange method.

The **ip ssh key-exchange-method dh-group14-sha256** command and default setting are available in regular ICX mode beginning with FastIron release 09.0.00a.

In FIPS mode, only the **ip ssh key-exchange-method dh-group14-sha256** command configuration is supported. In Common Criteria (CC) mode, only the **ip ssh key-exchange-method dh-group14-sha1** command configuration is supported.

Examples

The following example makes available and prioritizes diffie-hellman-group14-sha256 as a key-exchange method.

```
device(config)# ip ssh  key-exchange-method dh-group14-sha256
```

History

Release version	Command history
08.0.30f	This command was introduced.
09.0.00a	This command was modified to add the SHA-256 option in regular ICX mode. Previously, the option was available only in FIPS mode.
09.0.10b	This command was modified to remove the **dh-group1-sha1** option.

ip ssh password-authentication

Configures password authentication.

Syntax

ip ssh password-authentication { **yes** | **no** }

no ip ssh password-authentication { **yes** | **no** }

Command Default

Password authentication is enabled.

Parameters

yes

Enables the password authentication. The default is **yes**.

no

Disables the password authentication.

Modes

Global configuration mode

Usage Guidelines

After the SSH server on the device negotiates a session key and encryption method with the connecting client, user authentication takes place. The implementation of SSH supports DSA or RSA challenge-response authentication and password authentication. You can deactivate one or both user authentication methods for SSH. Note that deactivating both authentication methods disables the SSH server entirely.

With password authentication, users are prompted for a password when they attempt to log in to the device (provided empty password logins are not allowed). If there is no user account that matches the username and password supplied by the user, the user is not granted access.

The **no** form of the command disables password authentication.

Examples

The following example enables the password authentication.

```
device(config)# ip ssh password-authentication yes
```

ip ssh port

Configures the port for SSH traffic.

Syntax

ip ssh port *port-num*

no ip ssh port *port-num*

Command Default

By default, SSH traffic occurs on TCP port 22.

Parameters

port-num

Specifies the port number.

Modes

Global configuration mode

Usage Guidelines

If you change the default SSH port number, you must configure SSH clients to connect to the new port. Also, you should be careful not to assign SSH to a port that is used by another service. If you change the SSH port number, RUCKUS recommends that you change it to a port number greater than 1024.

The **no** form of the command changes the port to the default.

Examples

The following example configures the SSH port as 2200.

```
device(config)# ip ssh port 2200
```

ip ssh rekey

Configures the Secure Shell (SSH) rekey interval, either in terms of the maximum number of minutes or the maximum amount of data.

Syntax

ip ssh rekey { **client** | **server** } { **data** *Kbytes* | **time** *minutes* }

no ip ssh rekey { **client** | **server** } { **data** *Kbytes* | **time** *minutes* }

Command Default

SSH rekey is disabled by default in non-FIPS mode. In FIPS/CC mode the default value for time and data is 30 minutes and 500000 KB respectively. SSH rekey feature cannot be disabled in FIPS/CC mode.

Parameters

client

Specifies the rekey interval for the SSH client sessions.

server

Specifies the rekey interval for the SSH server sessions.

data *KBytes*

Configures the maximum amount of data (in kilobytes) that can be transmitted before SSH rekey is initiated. The valid range is from 100 through 2000000 kilobytes.

time *minutes*

Configures the maximum time in minutes before SSH rekey is initiated. The valid range is from 0 through 120 minutes.

Modes

Global configuration mode

Usage Guidelines

When the value for *minutes* is set to 0, SSH rekey does not take place.

It is recommended that the rekey data value not be configured higher than one Gigabyte.

In FIPS or CC mode, SSH rekey is enabled by default and cannot be disabled. The default value for time is 30 minutes and the default value for data is 500 MB in both FIPS and CC mode. If the rekey configuration is removed, the default values are applied. The default values are not displayed in the configuration.

Non-FIPS mode to FIPS or CC mode: If the rekey configuration is configured in non-FIPS mode, the same values are applied while moving to FIPS mode. If the rekey configuration is not configured in non-FIPS mode, the default values in FIPS or CC mode will be applied.

FIPS or CC mode to non-FIPS mode: The configuration in FIPS mode or CC mode is removed, and SSH rekey is disabled while moving to non-FIPS mode.

The **no** form of the command disables SSH rekey in normal operating mode.

Examples

The following example configures SSH rekey on the outbound SSH session every hour.

```
device# configure terminal
device(config)# ip ssh rekey client time 60
```

The following example configures SSH rekey on the inbound SSH session whenever 10000 kilobytes of data has been transmitted.

```
device# configure terminal
device(config)# ip ssh rekey server data 10000
```

History

Release version	Command history
08.0.70	This command was introduced.

ip ssh scp

Enables Secure Copy (SCP).

Syntax

ip ssh scp { **enable** | **disable** }

no ip ssh scp { **enable** | **disable** }

Command Default

SCP is enabled.

Parameters

enable

Enables SCP.

disable

Disables SCP.

Modes

Global configuration mode

Usage Guidelines

SCP uses security built into SSH to transfer image and configuration files to and from the device. SCP automatically uses the authentication methods, encryption algorithm, and data compression level configured for SSH.

If you disable SSH, SCP is also disabled.

The **no** form of the command disables SCP.

Examples

The following example disables SCP.

```
device(config)# ip ssh scp disable
```

The following example enables SCP.

```
device(config)# ip ssh scp enable
```

ip ssh timeout

Configures the wait time for a response from the client when the SSH server attempts to negotiate a session key and encryption method with a connecting client.

Syntax

ip ssh timeout *time*

no ip ssh timeout *time*

Command Default

The default timeout value is 120 seconds.

Parameters

time

Timeout value in seconds. The valid range is from 1 through 120 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command sets the timeout value to the default.

Examples

The following example configures the SSH timeout value to 60 seconds.

```
device(config)# ip ssh timeout 60
```

ip ssl min-version

Configures the minimum TLS version to be used to establish the TLS connection.

Syntax

ip ssl min-version{**tls_1_0**|**tls_1_1**}

no ip ssl min-version{**tls_1_0**|**tls_1_1**}

Command Default

For devices which act as an SSL server or HTTPS server, the default connection is with TLS 1.2.

For the RUCKUS device that acts as the SSL client or the syslog, OpenFlow, or secure AAA client, the TLS version is decided based on the server support.

Parameters

tls_1_0
: Specifies TLS 1.0 as the minimum version.

tls_1_1
: Specifies TLS 1.1 as the minimum version.

Modes

Global configuration mode

Usage Guidelines

If **tls_1_1** is set as the minimum version, TLS 1.1 and later versions are supported.

The **no** form of the command removes the minimum TLS version configuration and supports all TLS versions.

Examples

The following example establishes the TLS connection using the TLS 1.1 version and later.

```
device(config)# ip ssl min-version tls_1_1
```

History

Release version	Command history
08.0.20a	This command was introduced.
09.0.00	The tls_1_2 option was removed.

ip-subnet

Configures an IP subnet VLAN within a VLAN.

Syntax

ip-subnet { *ip-address ip-mask* [**name** *string*] }

no ip-subnet { *ip-address ip-mask* [**name** *string*] }

Command Default

A VLAN is not configured with an IP subnet and mask.

Parameters

ip-address

Specifies the IP address you want to assign to a VLAN. The IP address can be in the format A.B.C.D or A.B.C.D/L, where L is the subnet mask length.

ip-mask

Specifies the subnet mask you want to assign. This is required when the subnet mask length is not specified along with the IP address.

name *string*

Specifies the name of the IP subnet. The name can be up to 32 characters in length.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command removes the IP subnet VLAN.

Examples

The following example shows how to configure an IP subnet VLAN within a VLAN.

```
device(config)# vlan 4
device(config-vlan-4)# ip-subnet 10.1.3.0/24 name Brown
```

ip tcp adjust-mss

Configures the TCP MSS adjustment value on the IPv4 interface.

Syntax

ip tcp adjust-mss *tcp-mss-value*

no ip tcp adjust-mss *tcp-mss-value*

Command Default

The threshold value is not configured.

Parameters

tcp-mss-value

Configures the TCP MSS adjustment value for SYN SYN-ACK packets. Valid values range from 500 through 1460.

Modes

Interface configuration mode

Usage Guidelines

For tunnel interfaces CLI range differs depending on Tunnel mode.

The ranges are different if jumbo is enabled on the device.

Examples

The following example sets to configure the TCP MSS adjustment value in the interfaces

```
device(config)# interface ethernet 1/1/1
device (config-if-e1000-1/1/1)# ip tcp adjust-mss 800
```

History

Release version	Command history
08.0.90	This command was introduced.

ip tcp burst-max

Rate limits TCP SYN packets.

Syntax

ip tcp burst-max { *value* }

no ip tcp burst-max { *value* }

Parameters

value

The maximum allowable burst rate (Kbps) for TCP SYN packets. Valid values are 125 pkts through 100000.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command disables rate limiting.

Examples

The following example sets the maximum allowable burst rate for TCP SYN packets on the ICX device.

```
device# configure terminal
device(config)# ip tcp burst-max 100000
```

The following example sets the maximum allowable burst rate for TCP SYN packets on an Ethernet interface.

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-config-if-e1000-1/2/3)# ip tcp burst-max 300
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp burst-normal

Configures the threshold values for TCP SYN packets that are targeted at the router itself or that pass through an interface.

Syntax

ip tcp burst-normal *threshold-value* **burst-max** *max-value* **lockup** *time*

no ip tcp burst-normal *threshold-value* **burst-max** *max-value* **lockup** *time*

Command Default

The threshold value is not configured.

Parameters

threshold-value

Configures the allowable number of TCP SYN packets per second in normal burst mode. Valid values are from 30 through 16,000,000.

burst-max *max-value*

Specifies the number of packets per second in maximum burst mode. Valid values are from 30 through 16,000,000.

lockup *time*

Configures the lockup period in seconds. Valid values are from 1 through 10,000 seconds.

Modes

Global configuration mode

Interface configuration sub-mode

VLAN configuration sub-mode

Usage Guidelines

NOTE
This command is not supported on RUCKUS ICX 8200 devices.

In a TCP SYN attack, an attacker floods a host with TCP SYN packets that have random source IP addresses. For each of these TCP SYN packets, the destination host responds with a SYN ACK packet and adds information to the connection queue. However, because the source host does not exist, no ACK packet is sent back to the destination host, and an entry remains in the connection queue until it ages out (after approximately one minute). If the attacker sends enough TCP SYN packets, the connection queue can fill up, and service can be denied to legitimate TCP connections.

To protect against TCP SYN attacks, you can configure the device to drop TCP SYN packets when excessive packets are encountered. You can set threshold values for TCP SYN packets that are targeted at the router itself or that pass through an interface, and drop them when the thresholds are exceeded.

If the interface is part of a VLAN that has a router VE, you must configure TCP SYN attack protection at the VE level. When TCP SYN attack protection is configured at the VE level, it will apply to routed traffic only. It will not affect switched traffic.

NOTE
You must configure VLAN information for the port before configuring TCP SYN attack protection. You cannot change the VLAN configuration for a port on which TCP SYN attack protection is enabled.

NOTE
This command is available at the global configuration level. This command is supported on Ethernet and Layer 3 interfaces.

The rate of incoming TCP SYN packets is measured and compared to the threshold values as follows:

- If the number of TCP SYN packets exceeds the **burst-normal** value, the excess TCP SYN packets are dropped.
- If the number of TCP SYN packets exceeds the **burst-max** value, all TCP SYN packets are dropped for the number of seconds specified by the **lockup** value. When the lockup period expires, the burst counter is reset and measurement is restarted.

The **no** form of the command removes the threshold values set for TCP SYN packets.

Examples

The following example sets the threshold values for TCP SYN packets targeted at the router.

```
device(config)# ip tcp burst-normal 30 burst-max 100 lockup 300
```

The following example sets the threshold values for TCP SYN packets received on interface 1/1/1.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip tcp burst-normal 30 burst-max 100 lockup 300
```

The following example sets the threshold values for TCP SYN packets received on VLAN 23.

```
device(config)# vlan 23
device(config-vlan-23)# ip tcp burst-normal 5000 burst-max 10000 lockup 300
```

ip tcp fin-urg-psh

Drops TCP control packets with FIN URG and PSH flags set.

Syntax

ip tcp fin-urg-psh

no ip tcp fin-urg-psh

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command returns the ICX device to the default setting.

Examples

The following example configures the ICX device to drop TCP packets with FIN URG and PSH flags set, which could signal a DDOS attack.

```
device# configure terminal
device(config)# ip tcp fin-urg-psh
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp keepalive

Configures the time interval between TCP keepalive messages.

Syntax

ip tcp keepalive *timeout interval-time num-messages*

no ip tcp keepalive *timeout interval-time num-messages*

Command Default

The time interval between TCP keepalive messages is not configured.

Parameters

timeout

Configures the timeout in seconds to start sending keepalive messages. Set to 0 to disable the timeout.

interval-time

Configures the interval time in seconds between keepalive messages. Set to 0 to disable sending keepalive messages.

num-messages

Configures the number of keepalive messages to be sent before disconnecting.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables sending the keepalive messages. You can also set the *interval-time* variable as 0 to disable sending the keepalive messages.

Examples

The following example configures the interval between TCP keepalive messages as 5 seconds.

```
device(config)# ip tcp keepalive 10 5 2
```

ip tcp over-mac-multicast

Configures the ICX device to drop any control IPv4 of IPv6 TCP packets that have been sent using the MAC Multicast mechanism.

Syntax

ip tcp over-mac-multicast

no ip tcp over-mac-multicast

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is available only on ICX 8200 devices.

The **no** form of the command removes the configuration.

Examples

The following example configures the ICX device to drop TCP packets sent using the MAC Multicast mechanism, which is erroneous and could signal a DDOS attack.

```
device# configure terminal
device(config)# ip tcp over-mac-multicast
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp port-zero

Drops TCP control packets that have either the source or destination port set to zero.

Syntax

ip tcp port-zero

no ip tcp port-zero

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command returns the ICX device to the default setting.

Examples

The following example configures the ICX device to drop TCP packets that have either the source or destination port set to zero, which could signal a DDOS attack.

```
device# configure terminal
device(config)# ip tcp port-zero
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp syn-fin

Drops TCP control packets received with both SYN and FIN flags set.

Syntax

ip tcp syn-fin

no ip tcp syn-fin

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command resets the ICX device to the default.

Examples

The following example configures the ICX device to drop TCP packets received with both SYN and FIN flags set, which could signal a DDOS attack.

```
device# configure terminal
device(config)# no ip tcp syn-fin
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp syn-rst

Drops TCP control packets with both SYN and RST flags set.

Syntax

ip tcp syn-rst

no ip tcp syn-rst

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command returns the ICX device to the default setting.

Examples

The following example configures the ICX device to drop TCP packets with both SYN and RST flags set, which could signal a DDOS attack.

```
device# configure terminal
device(config)# ip tcp syn-rst
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp tcp-all

Drops TCP control packets with irregularities that typically signal DDOS attacks.

Syntax

ip tcp tcp-all

no ip tcp tcp-all

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

When the **ip tcp tcp-all** command is configured, the ICX device drops TCP control packets received with any of the following irregularities:

- sent using the MAC Multicast mechanism
- all flags set to zero
- FIN URG and PSH flags set
- both SYN and FIN flags in TCP packet set
- both SYN and RST flags in TCP packet set
- source or destination port set to zero

The **no** form of the command returns the ICX device to the default setting.

Examples

The following example configures the ICX device to drop TCP packets with specific irregularities that typically signal a DDOS attack.

```
device# configure terminal
device(config)# no ip tcp tcp-all
```

History

Release version	Command history
10.0.00	This command was introduced.

ip tcp zero-flags

Drops TCP control packets received with all flags set to zero.

Syntax

ip tcp zero-flags

no ip tcp zero-flags

Command Default

By default, the packets are not dropped.

Modes

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

The **no** form of the command returns the ICX device to the default setting.

Examples

The following example configures the ICX device to drop all TCP packets received with all flags set to zero, which could signal a DDOS attack.

```
device# configure terminal
device(config)# ip tcp zero-flags
```

History

Release version	Command history
10.0.00	This command was introduced.

ip-telephony data

Specifies the Avaya IP telephony data options in the DHCP server pool.

Syntax

ip-telephony data mcipadd *ip-address* [**tftpsrvr** *server-ip-address* | **httpsrvr** *server-ip-address* | **tlssrvr** *server-ip-address* | **mcport** *portnum* | **l2qaud** *prio* | **l2qsig** *prio* | **l2qvlan** *vlan-id* | **vlantest** *secs*]

no ip-telephony voice mcipadd *ip-address* [**tftpsrvr** *server-ip-address* | **httpsrvr** *server-ip-address* | **tlssrvr** *server-ip-address* | **mcport** *portnum* | **l2qaud** *prio* | **l2qsig** *prio* | **l2qvlan** *vlan-id* | **vlantest** *secs*]

Parameters

mcipadd *ip-address*

IP address of the gatekeeper. Atleast one IP address is required.

mcport *portnum*

Specifies IP telephony server port number. The default is 1719.

tftpsrvr/httpsrvr/tlssrvr *server ip-address*

Specifies the IP addresses of the TFP, HTTP, and TLS servers.

l2qaud or l2qsig *prio*

L2QAUD is the IP telephony L2 audio priority value. L2QSIG is the IP telephony L2 signaling priority value. This range is from 1 through 6. The default value is 6.

l2qvlan *vlan-id*

Specifies the IP telephony L2QVLAN number. The default is 0.

vlantest *secs*

The number of seconds a phone attempts to return to the previously known voice VLAN. This is not applicable for the default VLAN.

Modes

DHCP server pool configuration mode

Usage Guidelines

You must enter the MCIP address. The other parameters are optional.

The **no** form of the command removes the parameters from the DHCP server pool.

Examples

The following example configures the MCIP address and MCPORT number for IP telephony data.

```
device(config)# ip dhcp-server pool cabo
device(config-dhcp-cabo)# ip-telephony data mcipadd 1.1.1.2 mcport 1719
```

History

Release version	Command history
08.0.40	This command was introduced.

ip-telephony voice

Specifies the Avaya IP telephony voice options in the DHCP server pool.

Syntax

ip-telephony voice mcipadd *ip-address* [**tftpsrvr** *server-ip-address* | **httpsrvr** *server-ip-address* | **tlssrvr** *server-ip-address* | **mcport** *portnum* | **l2qaud** *prio* | **l2qsig** *prio* | **vlantest** *secs*]

no ip-telephony voice mcipadd *ip-address* [**tftpsrvr** *server-ip-address* | **httpsrvr** *server-ip-address* | **tlssrvr** *server-ip-address* | **mcport** *portnum* | **l2qaud** *prio* | **l2qsig** *prio* | **l2qvlan** *vlan-id* | **vlantest** *secs*]

Parameters

mcipadd *ip-address*

Specifies the addresses of gatekeepers. Atleast one IP address is required.

mcport *portnum*

Specifies the IP telephony server port number. The default is 1719.

tftpsrvr/httpsrvr/tlssrvr *server-ip-address*

Specifies the IP addresses of the TFTP, HTTP, and TLS servers.

l2qaud or l2qsig *prio*

Specifies the IP telephony L2QAUD or L2QSIG priority value. The range is from 1 to 6. The default value is 6.

l2qvlan *vlan-id*

Specifies the IP telephony L2QVLAN number. The default is 0.

vlantest *secs*

The number of seconds a phone attempts to return to the previously known voice VLAN. This is not applicable for the default VLAN.

Modes

DHCP server pool configuration mode

Usage Guidelines

You must enter the MCIP address. The other parameters are optional.

The **no** form of the command removes the parameters from the DHCP server pool.

Examples

The following example configures the MCIP address and MCPORT number for IP telephony voice.

```
device(config)# ip dhcp-server pool cabo
device(config-dhcp-cabo)# ip-telephony voice mcipadd 1.1.1.2 mcport 1719
```

History

Release version	Command history
08.0.40	This command was introduced.

ip tftp blocksize

Specifies the size of Trivial File Transfer Protocol (TFTP) blocks.

Syntax

ip tftp blocksize [*value*]

Parameters

value

Specifies the block size value, ranging from 512 through 8192 bytes.

Modes

Global configuration mode

Examples

The following example sets the TFTP block size to 8192 bytes.

```
device(config)# ip tftp blocksize 8192
```

History

Release Version	Command History
09.0.10	This command was introduced.

ip ttl

Modifies the time-to-live (TTL) threshold value.

Syntax

ip ttl *threshold-value*

no ip ttl *threshold-value*

Command Default

The default value for the TTL threshold is 64.

Parameters

threshold-value

Sets the time TTL for packets on the network. The range is from 1 to 255 hops. The default is 64 hops.

Modes

Global configuration mode

Usage Guidelines

The time to live (TTL) threshold prevents routing loops by specifying the maximum number of router hops an IP packet originated by the Layer 3 switch can travel through. Each device capable of forwarding IP that receives the packet decrements (decreases) the packet TTL by one. If a device receives a packet with a TTL of 1 and reduces the TTL to zero, the device drops the packet.

The **no** form of the command resets TTL to 64 hops.

Examples

The following example sets the TTL value to 25 hops.

```
device(config)# ip ttl 25
```

ip use-acl-on-arp

Configures the ARP module to check the source IP address of the ARP request packets received on the interface before applying the specified ACL policies to the packet (ACL ARP filtering).

Syntax

ip use-acl-on-arp { *acl-num* }

no ip use-acl-on-arp { *acl-num* }

Command Default

ACL ARP filtering is not enabled.

Parameters

acl-num

Specifies the ACL number to be used for filtering (required).

Modes

Interface configuration sub-mode

Usage Guidelines

ACL ARP filtering is not applicable to outbound traffic.

This filtering occurs on the management processor. The command is available on physical interfaces and virtual routing interfaces. Stnadard and extended IPv4 numbered ACLs can be used. If any other ACL is used, an error is displayed.

When the **ip use-acl-on-arp** command is configured, the ARP module checks the source IP address of the ARP request packets received on the interface. It then applies the specified ACL policies to the packet. Only the packet with the IP address that the ACL permits will be written in the ARP table; those that are not permitted will be dropped.

ARP requests will not be filtered by ACLs if an ACL ID is specified for the **ip use-ACL-on-arp** command, but no IP address or "any any" filtering criteria has been defined under the ACL ID.

The **no** form of the command disables the ACL ARP filtering.

Examples

The following example shows a complete ACL ARP configuration.

```
device# configure terminal
device(config)# ip access-list extended 101
(config-ext-ipacl-101)# permit ip host 192.168.2.2 any
device(config-ext-ipacl-101)# exit
device(config)# ip access-list extended 102
device(config-ext-ipacl-102)# permit ip host 192.168.2.3 any
device(config-ext-ipacl-102)# exit
device(config)# ip access-list extended 103
device(config-ext-ipacl-103)# permit ip host 192.168.2.4 any
device(config-ext-ipacl-103)# exit
device(config)# vlan 2
device(config-vlan-2)# tagged ethernet 1/1/1 to 1/1/2
device(config-vlan-2)# interface ve 2
device(config-vlan-2)# vlan 3
device(config-vlan-3)# tagged ethernet 1/1/1 to 1/1/2
device(config-vlan-3)#router-interface ve 3
device(config-vlan-3)# vlan 4
device(config-vlan-4)# tagged ethernet 1/1/1 to 1/1/2
device(config-vlan-4)# interface ve 4
device(config-vlan-4)# vlan 2
device(config-vlan-2)# ip access-group 101 in
device(config-vlan-2)# ip address 192.168.2.1/24
device(config-vlan-2)# interface ve 2
device(config-vif-2)# ip use-acl-on-arp 103
device(config-vif-2)# vlan 3
device(config-vlan-3)# ip access-group 102 in
device(config-vlan-3)# interface ve 3
device(config-vif-3)# ip use-acl-on-arp 103
device(config-vif-3)# vlan 4
device(config-vlan-4)# interface ve 4
device(config-vif-4)# ip use-acl-on-arp 103
device(config-vif-4)# exit
device(config)#
```

History

Release version	Command history
08.0.95	This command was modified to require an ACL number.

ip vrrp auth-type

Configures the type of authentication used on a Virtual Router Redundancy Protocol (VRRP) interface.

Syntax

ip vrrp auth-type { **no-auth** | **simple-text-auth** *auth-text* }

no ip vrrp auth-type { **no-auth** | **simple-text-auth** *auth-text* }

Command Default

No authentication type is configured on a VRRP interface.

Parameters

no-auth

Configures no authentication on the VRRP interface.

simple-text-auth *auth-text*

Configures a simple text string as a password used for authenticating packets on the interface. The maximum length of the text string is 64 characters.

Modes

Interface configuration mode

Usage Guidelines

If the **no-auth** option is configured, ensure that all interfaces on all devices that support the virtual router ID do not use authentication.

If the **simple-text-auth** option is configured, ensure that all interfaces on all devices that support the virtual router ID are configured to use simple password authentication with the same password.

The **no** form of this command removes the VRRP authentication from the interface.

NOTE
Authentication is not supported by VRRP-Ev3.

Examples

The following example configures no authentication on Ethernet interface 1/1/6.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip vrrp auth-type no-auth
```

The following example configures simple password authentication on Ethernet interface 1/1/6.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip vrrp auth-type simple-text-auth yourpwd
```

ip vrrp vrid

Configures an IPv4 Virtual Router Redundancy Protocol (VRRP) virtual router identifier (VRID).

Syntax

ip vrrp vrid *vrid*

no ip vrrp vrid *vrid*

Command Default

A VRRP VRID does not exist.

Parameters

vrid

Configures a number for the IPv4 VRRP VRID. The range is from 1 through 255.

Modes

Interface configuration mode

Usage Guidelines

Before configuring this command, ensure that VRRP is enabled globally; otherwise, an error stating “Invalid input...” is displayed as you try to create a VRRP instance.

The **no** form of this command removes the IPv4 VRRP VRID from the configuration.

Examples

The following example configures VRRP virtual router ID 1.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.5.1
device(config-if-e1000-1/1/6-vrid-1)# activate
VRRP router 1 for this interface is activating
```

ip vrrp-extended auth-type

Configures the type of authentication used on a Virtual Router Redundancy Protocol Extended (VRRP-E) interface.

Syntax

ip vrrp-extended auth-type{**no-auth**|**simple-text-auth***auth-text*|**md5-auth***auth-text*}

no ip vrrp-extended auth-type{**no-auth**|**simple-text-auth***auth-text*|**md5-auth***auth-text*}

Command Default

No authentication is configured for a VRRP-E interface.

Parameters

no-auth

Configures no authentication on the VRRP-E interface.

simple-text-auth*auth-text*

Configures a simple text string as a password used for authenticating packets on the interface. The maximum length of the text string is 64 characters.

md5-auth*auth-text*

Configures MD5 authentication on the interface. The maximum length of the text string is 64 characters.

Modes

Interface configuration mode

Usage Guidelines

If the **simple-text-auth** option is configured, ensure that all interfaces on all devices that support the virtual router ID are configured to use simple password authentication with the same password.

If the **md5-auth** option is configured, syslog and SNMP traps are generated if a packet is being dropped due to MD5 authentication failure. Using MD5 authentication implies that the software does not need to run checksum verification on the receiving device and can rely on the authentication code (message digest 5 algorithm) to verify the integrity of the VRRP-E message header.

If the **no-auth** option is configured, ensure that all interfaces on all devices that support the virtual router ID do not use authentication.

The **no** form of this command removes the VRRP-E authentication from the interface.

NOTE
Authentication is not supported by VRRP-Ev3.

Examples

The following example configures no authentication on Ethernet interface 1/1/6.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip vrrp-extended auth-type no-auth
```

The following example configures simple password authentication on Ethernet interface 1/1/6.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip vrrp-extended auth-type simple-text-auth yourpwd
```

The following example configures MD5 authentication on Ethernet interface 1/1/6. When MD5 authentication is configured, a syslog message is displayed.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip vrrp-extended auth-type md5-auth lyk28d3j

Aug 10 18:17:39 VRRP: Configuration VRRP_CONFIG_MD5_AUTHENTICATION request received
Aug 10 18:17:39 VRRP: Port 1/1/6, VRID 2 - send advertisement
Ver:3 Type:1 Vrid:2 Pri:240 #IP:1 AuthType:2 Adv:1 Chksum:0x0000
HMAC-MD5 CODE:[00000000000000000000400010]
IpAddr: 10.53.5.1
```

ip vrrp-extended vrid

Configures an IPv4 Virtual Router Redundancy Protocol Extended (VRRP-E) virtual router identifier (VRID).

Syntax

ip vrrp-extended vrid *vrid*

no ip vrrp-extended vrid *vrid*

Command Default

A VRRP-E VRID does not exist.

Parameters

vrid

Configures a number for the IPv4 VRRP-E VRID. The range is from 1 through 255.

Modes

Interface configuration mode

Usage Guidelines

Before configuring this command, ensure that VRRP-E is enabled globally; otherwise an error stating "Invalid input..." is displayed as you try to create a VRRP-E instance.

The **no** form of this command removes the IPv4 VRRP-E VRID from the configuration.

Examples

The following example configures VRRP-E VRID 1.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.10.1/24
device(config-if-e1000-1/1/6)# ip vrrp-extended vrid 1
device(config-if-e1000-1/1/6-vrid-1)# backup priority 50 track-priority 10
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.10.254
device(config-if-e1000-1/1/6-vrid-1)# activate
```

ipv6 access-group

Applies an IPv6 ACL to an interface.

Syntax

ipv6 access-group{*name*}{**in**|**out**}[**logging enable**]

no ipv6 access-group{*name*}{**in**|**out**}[**logging enable**]

Parameters

name
: Specifies the name of the IPv6 ACL being defined.

in
: Applies the IPv6 ACL to incoming traffic.

out
: Applies the IPv6 ACL to outbound traffic.

[**logging enable**]
: Turns logging on for matched statements in the ACL that also include a **log** action.

Modes

Global configuration mode

Interface configuration sub-modes

Usage Guidelines

The **no** form of the command removes the IPv6 ACL.

From FastIron release 08.0.95, the **ipv6 access-group** command replaces the **ipv6 traffic-filter** command.

Examples

The following example creates an IPv6 access-list and enables accounting.

```
device# configure terminal
device(config)# ipv6 access-list aclv6log
device(config-ipv6-access-list aclv6log)# enable accounting
device(config-ipv6-access-list aclv6log)# exit
device(config)#
```

The following example applies the IPv6 ACL netw to inbound traffic on ports 1/1/2 and 1/43.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000-1/1/2)# ipv6 enable
device(config-if-e1000-1/1/2)# ipv6 access-group netw in
device(config-if-e1000-1/1/2)# exit
device(config)# interface ethernet 1/4/3
device(config-if-e1000-1/4/3)# ipv6 enable
device(config-if-e1000-1/4/3)# ipv6 access-group netw in
```

The following example binds several ACLs, including IPv6, IPv4, and MAC ACLs, to VLAN 555.

```
device# configure terminal
device(config)# vlan 555 by port
device(config-vlan-555)# tagged ethe 1/2/2 lag 10
device(config-vlan-555)# interface ve 555
device(config-vlan-555)# ipv6 access-group scale25 in
device(config-vlan-555)# ipv6 access-group scale15 out
device(config-vlan-555)# mac access-group mac_acl1 in
device(config-vlan-555)# ip access-group 123 in
device(config-vlan-555)# ip access-group 134 out
device(config-vlan-555)# exit
device(config)#
```

The following example applies IPv6, IPv4, and MAC ACLs to tagged Ethernet port 1/2/2 specifically within LAG 10 and enables logging of traffic that matches statements that contain the **log** keyword within the applied ACLs.

```
device# configure terminal
device(config)# vlan 558 by port
device(config-vlan-558)# tagged ethe 1/2/2 lag 10
device(config-vlan-558)# ipv6 access-group scale12 in lag 10 logging enable
device(config-vlan-558)# mac access-group mac_acl in lag 10
device(config-vlan-558)# ip access-group 134 in lag 10 logging enable
```

History

Release version	Command history
08.0.95	This command was introduced to replace the **ipv6 traffic-filter** command.

ipv6 access-list

Creates an IPv6 access control list (ACL) and enters IPv6 access-list configuration sub-mode.

Syntax

ipv6 access-list { *acl-name* }

no ipv6 access-list { *acl-name* }

Command Default

The IPv6 ACL is not configured.

Parameters

acl-name

Specifies the ACL name.

Modes

Global configuration mode

Usage Guidelines

An ACL name must be unique among IPv6 and IPv4 ACLs.

The following points apply to naming ACLs:

- An ACL name must begin with an alphabetical character followed by alphanumeric characters.
- The maximum length of an ACL name is 47 characters.
- An ACL name cannot contain special characters such as a double quote (").
- The ACL name cannot be 'test'.

The **no** form of the command removes the configured IPv6 ACL.

In IPv6 access-list permit and deny statements, the following protocols can be matched:

- a numbered IPv6 protocol (decimal values 0 through 255)
- ahp - Authentication Header Protocol
- esp - Encapsulating Security Payload
- icmp - Internet Control Message Protocol
- ipv6 - Internet Protocol version 6
- sctp - Stream Control Transmission Protocol
- tcp - Transmission Control Protocol
- udp - User Datagram Protocol

In IPv6 access-lists, the following TCP/UDP application port names are allowed, in addition to any application-specific port number in decimal format:

- ftp-data
- ftp
- ssh
- telnet
- smtp
- dns
- http
- gppitnp
- pop2
- pop3
- sftp
- sqlserv
- bgp
- ldap
- ssl

Examples

The following example configures an IPv6 ACL named "acl1" to permit all UDP traffic.

```
device# configure terminal
device(config)# ipv6 access-list acl1
device(config-ipv6-access-list acl1)# permit udp any any
```

The following example creates an ACL that, when applied, blocks web access (traffic from port 80) from a specific source IPv6 address to the destination address for a particular web host.

```
device# configure terminal
device(config)# ipv6 access-list acltcp
device(config-ipv6-access-list acltcp)# deny tcp 2000:DB8:e0bb::/64 eq 80 1000:D01:c011::/64
device(config-ipv6-access-list acltcp)# permit ipv6 any any
```

The following example creates and applies an IPv6 access list that enables accounting, denies IPv6 traffic from a particular host, and allows all other IPv6 traffic.

```
device# configure terminal
device(config)# ipv6 access-list aclv6stats
device(config-ipv6-access-list aclv6stats)# enable accounting
device(config-ipv6-access-list aclv6stats)# deny ipv6 2001:DB8:e0bb::/64 any log
device(config-ipv6-access-list aclv6stats)# permit ipv6 any any
device(config-ipv6-access-list aclv6stats)# interface ethernet 1/3/1
device((config-if-e1000-1/3/1)# ipv6 access-group aclv6stats in logging enable
```

History

Release version	Command history
08.0.95	This command was modified to allow the **enable accounting** option.

ipv6 address

Configures an IPv6 address for an interface.

Syntax

ipv6 address *ipv6-prefix* [**anycast** | **eui-64**]

no ipv6 address *ipv6-prefix* [**anycast** | **eui-64**]

ipv6 address *ipv6-address* **link-local**

no ipv6 address *ipv6-address* **link-local**

Command Default

An IPv6 address is not configured.

Parameters

ipv6-prefix

Specifies the IPv6 prefix address in the format X:X::X:X/M.

anycast

Configuresan address as an anycast address.

eui-64

Configures the global address with an EUI-64 interface ID in the low-order 64 bits. The interface ID is automatically constructed in IEEE EUI-64 format using the interface's MAC address.

ipv6-address

Specifies the IPv6 address.

link-local

Configures the address as a link-local address.

Modes

Interface configuration mode

Usage Guidelines

The **eui-64** keyword is not available when assigning a 127-bit subnet mask to an IPv6 address.

The **no** form of the command removes the IPv6 address.

Examples

The following example configures an IPv6 address for the tunnel interface.

```
device# configure terminal
device(config)# interface tunnel 1
device(config-tnif-1)# ipv6 address 2001:DB8:384d:34::/64 eui-64
```

The following example assigns a 127-bit subnet mask to an IPv6 address on two devices.

```
device1# configure terminal
device1(config)# interface ethernet 1/1/5
device1(config-if-e1000-1/1/5)# ipv6 address 2001:1::0/127

device2# configure terminal
device2(config)# interface ethernet 1/1/5
device2(config-if-e1000-1/1/5)# ipv6 address 2001:1::1/127
```

History

Release version	Command history
08.0.92a	Support was added for 127-bit subnet masks.

ipv6 cache-lifetime

Configures the IPv6 cache-aging lifetime.

Syntax

ipv6 cache-lifetime*interval*

no ipv6 cache-lifetime*interval*

Command Default

Cache aging is enabled by default.

Parameters

interval

Specifies the cache timeout interval in seconds. The default is 300 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command disables cache aging.

Examples

This example sets the cache-aging interval to 17 seconds.

```
device# configure terminal
device (config)# ipv6 cache-lifetime 17
```

History

Release version	Command history
08.0.30	This command was introduced.

ipv6 deny-undetermined-transport

Configures the IPv6 drop rule where IPv6 fragment traffic is dropped if received with an incomplete header in the first fragment.

Syntax

ipv6 deny-undetermined-transport any

ipv6 deny-undetermined-transport *ipv6-address*

no ipv6 deny-undetermined-transport any

no ipv6 deny-undetermined-transport *ipv6-address*

Command Default

The IPv6 drop rule is not enabled.

Parameters

any
Specifies any source host.

ipv6-address
Specifies a specific source.

Modes

Global configuration mode

Usage Guidelines

TCP, UDP, OSPFv3, and VRRPv3 transport headers are supported.

The maximum number of filters that can be configured is16.

The **no** form of the command disables the IPv6 drop rule where packets are dropped if fragments are missing from the header.

Examples

The following example enables the IPv6 drop rule where packets are dropped if fragments are missing from the header for any source address.

```
device# configure terminal
device(config)# ipv6 deny-undetermined-transport any any
```

The following example enables the IPv6 drop rule where packets are dropped if fragments are missing from the header for a specified source address.

```
device# configure terminal
device(config)# ipv6 deny-undetermined-transport 2001:1::5:1 any
```

History

Release version	Command history
09.0.10	This command was introduced.

ipv6 dhcp-relay accept-broadcast

Enables the DHCPv6 relay agent to accept DHCPv6 client packets with a broadcast MAC address.

Syntax

ipv6 dhcp-relay accept-broadcast

no ipv6 dhcp-relay accept-broadcast

Command Default

The IPv6 DHCP relay agent does not accept DHCPv6 client packets with a Broadcast MAC address.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the acceptance of DHCPv6 client packets with a broadcast MAC address by the DHCPv6 relay agent.

Examples

The following example enables the DHCPv6 relay agent to accept DHCPv6 client packets with a broadcast MAC address.

```
device# configure terminal
device(config)# ipv6 dhcp-relay accept-broadcast
```

History

Release version	Command history
08.0.92a	This command was introduced.

ipv6 dhcp-relay destination

Enables the IPv6 DHCP relay agent function and specifies the IPv6 address as a destination address to which the client messages are forwarded.

Syntax

ipv6 dhcp-relay destination *ipv6-address* [**outgoing-interface** { **ethernet** *stack/slot/port* | **tunnel** *tunnel-id* | **ve** *ve-num*]

no ipv6 dhcp-relay destination *ipv6-address* [**outgoing-interface** { **ethernet** *stack/slot/port* | **tunnel** *tunnel-id* | **ve** *ve-num*]

Command Default

The IPv6 DHCP relay agent function is disabled.

Parameters

ipv6-address
: Specifies the IPv6 address as a destination address to which the client messages can be forwarded.

outgoing-interface
: Configures the interface on which DHCPv6 packet will be relayed.

ethernet *stack/slot/port*
: Specifies the Ethernet interface on which DHCPv6 packet will be relayed.

tunnel *tunnel-id*
: Specifies the tunnel interface on which DHCPv6 packet will be relayed.

ve *ve-num*
: Specifies the Virtual Ethernet (VE) interface on which DHCPv6 packet will be relayed.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command removes the DHCP relay agent from the interface.

You can configure up to 16 relay destination addresses on an interface.

Examples

The following example enables the DHCPv6 relay agent function and specifies the relay destination (the DHCP server) address on an interface.

```
device(config)# interface ethernet 1/2/3
device(config-if-e10000-1/2/3)# ipv6 dhcp-relay destination 2001::2
device(config-if-e10000-1/2/3)# ipv6 dhcp-relay destination fe80::224:38ff:febb:e3c0 outgoing-interface
ethernet 1/2/5
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

ipv6 dhcp-relay distance

Assigns the administrative distance to IPv6 DHCP static routes installed in the IPv6 route table for the delegated prefixes on the interface.

Syntax

ipv6 dhcp-relay distance *value*

no ipv6 dhcp-relay distance *value*

Command Default

The administrative distance is not assigned.

Parameters

value

Assigns the administrative distance to DHCPv6 static routes on the interface. The range is from 1 through 255. If the value is set to 255, then the delegated prefixes for this interface will not be installed in the IPv6 static route table.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command sets the parameter to a default value of 10.

The administrative distance value must be set so that it does not replace the same IPv6 static route configured by the user.

Examples

The following example sets the administrative distance value to 25.

```
device(config-if-eth2/1)# ipv6 dhcp-relay distance 25
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

ipv6 dhcp-relay include-options

Includes the parameters on the IPv6 DHCP relay agent messages.

Syntax

ipv6 dhcp-relay include-options [**interface-id**] [**remote-id**] [**link-layer-option**]

no ipv6 dhcp-relay include-options [**interface-id**] [**remote-id**] [**link-layer-option**]

Command Default

The parameters are not included on the IPv6 DHCP relay agent messages.

Parameters

interface-id

Includes the interface-ID parameter (option 18) in the IPv6 DHCP relay agent messages.

remote-id

Includes the remote-ID (option 37) parameter in the IPv6 DHCP relay agent messages.

link-layer-option

Includes the client link layer address (option 79) in the relay-forward messages.

Modes

Interface configuration mode

Usage Guidelines

The interface-ID parameter on the DHCPv6 relay forward message is used to identify the interface on which the client message is received. By default, this parameter is included only when the client message is received with the link-local source address.

You can enter either one or all of the include options as identifiers to specify in the relay-forward message.

The **no** form of the command disables the relay agent include options parameters.

Examples

The following example includes the **link-layer-option** parameter on the DHCPv6 relay agent messages.

```
device(config)# interface ethernet 1/1/3
device(config-if-eth-1/1/3)# ipv6 dhcp-relay include-options link-layer-option
```

History

Release version	Command history
08.0.10d	This command was introduced with support for the **interface-id** option.

Release version	Command history
08.0.30	Support for this command (with the **interface-id** keyword) was added in FastIron 08.0.30 and later releases.
08.0.40	Included support for **remote-id** and **link-layer-option** keywords.

ipv6 dhcp-relay maximum-delegated-prefixes

Sets the number of delegated prefixes that can be learned at the global and interface levels.

Syntax

ipv6 dhcp-relay maximum-delegated-prefixes *value*

no ipv6 dhcp-relay maximum-delegated-prefixes *value*

Command Default

The DHCPv6 Relay Agent Prefix Delegation Notification is enabled when the DHCPv6 relay agent feature is enabled on the interface.

Parameters

value

Limits the maximum number of prefixes that can be learned at the global level. The range is from 0 through 512. The global level default value is 500 while the interface level default is 100.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

The **no** form of the command sets the parameter to the default value of the specified platform.

You can disable the DHCPv6 Relay Agent Prefix Delegation Notification at the system or the interface level by setting ipv6 dhcp-relay maximum-delegated prefixes to 0 at the system or interface level.

The sum of all the delegated prefixes that can be learned at the interface level is limited by the system maximum. Make sure that there is enough free space in the flash memory to save information about delegated prefixes in flash on both the active and standby management processors.

Examples

The following example sets the maximum delegated prefixes to 500 at the global level.

```
device(config)# ipv6 dhcp-relay maximum-delegated-prefixes 500
```

The following example sets the maximum delegated prefixes to 100 at the interface level.

```
device(config)# config int e 1/2/1
device(config-if-e10000-1/2/1)# ipv6 dhcp-relay maximum-delegated-prefixes 100
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

ipv6 dhcp6-server enable

Enables the DHCPv6 server globally.

Syntax

ipv6 dhcpv6-server enable

no ipv6 dhcpv6-server enable

Command Default

The DHCPv6 server is not enabled.

Modes

Global configuration mode

Usage Guidelines

To use this command, you must upgrade to FI 08.0.90 using the Unified FastIron Image (UFI). Refer to the **Software Upgrade and Downgrade** chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information. The **no** form of the command disables the DHCPv6 server globally.

Examples

The following example enables the DHCPv6 server globally.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)#
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 dhcp6 snooping vlan

Enables DHCPv6 snooping on a VLAN or a range of VLANs

Syntax

ipv6 dhcp6 snooping vlan *vlan-id* [**to** *vlan-id* ...]

no ipv6 dhcp6 snooping vlan *vlan-id* [**to** *vlan-id* ...]

Command Default

DHCPv6 snooping is disabled by default.

Parameters

vlan-id

Specifies the ID of a configured client or DHCPv6 server VLAN.

to *vlan-id*

Specifies a range of VLANs.

Modes

Global configuration mode

Usage Guidelines

DHCPv6 snooping must be enabled on the client and the DHCPv6 server VLANs.

When configuring DHCPv6 snooping on a range of VLANs or multi-VLAN, there cannot be any VLAN in the range that is a member of a VLAN group or any reserved VLAN. Otherwise, configurations fail on the entire range.

DHCPv6 Snooping can be configured for a VLAN or VLANS even before the VLAN or VLANS are created. VLANs and DHCPv6 Snooping configurations on the VLANS are not automatically deleted when the VLAN is deleted.

DHCPv6 snooping can be configured on a maximum of 511 VLANs.

DHCPv6 snooping cannot be enabled for a VLAN that is a member of a VLAN group.

The **no** form of the command disables DHCPv6 snooping on the VLAN or range of VLANs.

Examples

The following example enables DHCPv6 snooping on VLAN 2.

```
device# configure terminal
device(config)# ipv6 dhcp6 snooping vlan 2
```

The following example configures VLANs 100 through 150, VLAN 160, and VLANs 170 through 200 and enables DHCPv6 snooping on all of the configured VLANs.

```
device# configure terminal
device(config)# vlan 100 to 150
device(config-mvlan-100-150)# tagged ethernet 1/1/12
device(config-mvlan-100-150)# exit
device(config)# vlan 150 to 200
device(config-mvlan-150-200)# exit
device(config)# ipv6 dhcp6 snooping vlan 100 to 150 160 170 to 200
```

History

Release version	Command history
08.0.80	The **to** keyword was added to enable DHCPv6 snooping on a range of VLANs by using a single command.
08.0.95	This command was modified to limit DHCPv6 snooping configurations to a maximum of 511 VLANs.

ipv6 dns server-address

Configures IPv6 DNS server address.

Syntax

ipv6 dns server-address *ipv6-address* [*ipv6-address* ...]

no ipv6 dns server-address *ipv6-address* [*ipv6-address* ...]

Command Default

IPv6 DNS server addresses are not configured.

Parameters

ipv6-address

Specifies the IPv6 address of the DNS server. You can specify up to four DNS server IPv6 address in the same command line.

Modes

Global configuration mode

Usage Guidelines

IPv6 defines new DNS record types to resolve queries for domain names to IPv6 addresses, as well as IPv6 addresses to domain names. RUCKUS devices running IPv6 software support AAAA DNS records, which are defined in RFC 1886.

AAAA DNS records are analogous to the A DNS records used with IPv4. They store a complete IPv6 address in each record. AAAA records have a type value of 28.

The **no** form of the command removes the DNS server address.

Examples

The following example configures an IPv6 DNS server address.

```
device(config)# ipv6 dns server-address 2001:DB8::1
```

ipv6 drop routing-type

Enables the dropping of routing header options so that only IPv6 routing type value 2 is allowed.. All other routing types, from 0 through 255, are dropped.

Syntax

ipv6 drop routing-type

no ipv6 drop routing-type

Command Default

Dropping IPv6 routing header options is disabled by default.

Modes

Global configuration mode

Usage Guidelines

When this command is used, only IPv6 routing type value 2 is allowed. All other routing types (0 through 255) are dropped.

NOTE
Dropping IPv6 routing header options is not supported on ICX 7550 and ICX 7850 devices.

When an IPv6 packet has multiple extension headers, the action taken is based on the first extension header.

The **no** form of this command disables the dropping of routing header options.

Examples

The following example enables the dropping of IPv6 routing header options.

```
device# configure terminal
device(config)# ipv6 drop routing-type
```

The following example disables the dropping of IPv6 routing header options.

```
device# configure terminal
device(config)# no ipv6 drop routing-type
```

History

Release version	Command history
09.0.10	This command was introduced.

ipv6 enable

Enables IPv6.

Syntax

ipv6 enable

no ipv6 enable

Command Default

IPv6 is enabled by default in the Layer 2 switch code.

IPv6 is disabled by default in the router code.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

IPv6 is enabled by default in the Layer 2 switch code. If desired, you can disable IPv6 on a global basis on a device running the switch code.

IPv6 is disabled by default in the router code and must be configured on each interface that will support IPv6. In router code, the **ipv6 enable** command enables IPv6 on the switch and specifies that the interface is assigned an automatically computed link-local address

Before an IPv6 ACL can be applied to an interface, it must first be created, and then IPv6 must be enabled on that interface.

The **no** form of the command disables IPv6 on the interface.

Examples

The following example re-enables the IPv6 after it has been disabled.

```
device(config)# ipv6 enable
```

The following example enables IPv6 on Ethernet interface 1/1/1.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ipv6 enable
```

ipv6 hitless-route-purge-timer

Configures the timer to set the duration for which the routes should be preserved after switchover.

Syntax

ipv6 hitless-route-purge-timer *seconds*

no ipv6 hitless-route-purge-timer *seconds*

Command Default

The default timer setting is 45 seconds.

Parameters

seconds

Specifies the time after switchover to start IPv6 route purge. The value can range from 2 to 600 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the configured value and sets the timer to the default 45 seconds.

Examples

The following example shows how to set the IPv6 hitless purge timer to 75 seconds.

```
device(config)# ipv6 hitless-route-purge-timer 60
```

ipv6 hop-limit

Configures the maximum number of hops an IPv6 packet can traverse.

Syntax

ipv6 hop-limit *number*

no ipv6 hop-limit *number*

Command Default

By default, the maximum number of hops an IPv6 packet can traverse is 64.

Parameters

number

Specifies the maximum number of hops an IPv6 packet can traverse. Valid values are 0 through 255. The default value is 64.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the maximum number of hops an IPv6 packet can traverse to 64.

Examples

The following example configures the maximum number of hops an IPv6 packet can traverse to 70.

```
device(config)# ipv6 hop-limit 70
```

ipv6 icmp error-interval

Configures ICMP rate limiting, that is, the rate at which IPv6 ICMP error messages are sent out on a network.

Syntax

ipv6 icmp error-interval *interval* [*size*]

no ipv6 icmp error-interval *interval* [*size*]

Command Default

ICMP rate limiting is enabled by default.

Parameters

interval

Specifies the interval in milliseconds at which tokens are placed in the bucket. Valid values are 0 through 2147483647 and the default value is 100 milliseconds. Setting the value to 0 disables ICMP rate limiting.

size

Specifies the maximum number of tokens stored in the bucket. Valid values are1 to 200 and the default is 10 tokens.

Modes

Global configuration mode

Usage Guidelines

You can limit the rate at which IPv6 ICMP error messages are sent out on a network. IPv6 ICMP implements a token bucket algorithm.

To illustrate how this algorithm works, imagine a virtual bucket that contains a number of tokens. Each token represents the ability to send one ICMP error message. Tokens are placed in the bucket at a specified interval until the maximum number of tokens allowed in the bucket is reached. For each error message that ICMP sends, a token is removed from the bucket. If ICMP generates a series of error messages, messages can be sent until the bucket is empty. If the bucket is empty of tokens, error messages cannot be sent until a new token is placed in the bucket.

If you configure the interval value to a number that does not evenly divide into 100000 (100 milliseconds), the system rounds up the value to a next higher value that does divide evenly into 100000. For example, if you specify an interval value of 150, the system rounds up the value to 200.

The **no** form of the command disables ICMP rate limiting.

Examples

The following example configures the interval to 1000 milliseconds and the number of tokens to 100 tokens.

```
device(config)# ipv6 icmp error-interval 1000 100
```

ipv6 icmp fragment_header_bit

Sets the atomic fragment header bit when the maximum transmission unit (MTU) is less than or equal to 1280.

Syntax

ipv6 icmp fragment_header_bit

no ipv6 fragment_header_bit

Command Default

Disabled by default.

Modes

Global configuration mode

Usage Guidelines

Use this command only if USG IPV6 functionality is needed.

The **no** form of the command restores the default.

Examples

The following example configures the fragment header bit.

```
device# configure terminal
device(config)# ipv6 icmp fragment_header_bit
```

History

Release version	Command history
08.0.61	This command was introduced.

ipv6 icmp source-route

Generates ICMP parameter problem message for source routed IPv6 packet.

Syntax

ipv6 icmp source-route

no ipv6 icmp source-route

Command Default

By default, when the router drops a source-routed packet, it sends an ICMP Parameter Problem (type 4), Header Error (code 0) message to the packet's source address, pointing to the unrecognized routing type.

Modes

Global configuration mode

Usage Guidelines

The IPv6 specification (RFC 2460) specifies support for IPv6 source-routed packets using a type 0 Routing extension header, requiring device and host to process the type 0 routing extension header. However, this requirement may leave a network open to a DoS attack. A security enhancement disables sending IPv6 source-routed packets to IPv6 devices. (This enhancement conforms to RFC 5095.)

By default, when the router drops a source-routed packet, it sends an ICMP Parameter Problem (type 4), Header Error (code 0) message to the packet's source address, pointing to the unrecognized routing type.

The **no** form of the command disables the ICMP error messages for source routed IPv6 packet.

Examples

The following example disables the ICMP error messages for source routed IPv6 packet.

```
device(config)# no ipv6 icmp source-route
```

The following example re-enables the ICMP error messages for source routed IPv6 packet.

```
device(config)# ipv6 icmp source-route
```

ipv6 load-sharing

Enables Equal-cost multi-path routing (ECMP) load sharing for IPv6.

Syntax

ipv6 load-sharing [*num*]

no ipv6 load-sharing [*num*]

Command Default

ECMP load-sharing for IPv6 is enabled and allows traffic to be balanced across up to four equal paths.

Parameters

num

Specifies the number of load-sharing paths. The value can range from 2 through 8. The default value is 4.

Modes

Global configuration mode

Usage Guidelines

If you want to re-enable the feature after disabling it, you must specify the number of load-sharing paths.

The **no** form of the command sets the load-sharing path to the default value of 4.

Examples

The following example sets the number of ECMP load-sharing paths for IPv6 to 6.

```
device(config)# ipv6 load-sharing 6
```

ipv6 max-mroute

Configures the maximum number of IPv6 multicast routes that are supported.

Syntax

ipv6 max-mroute *num*

no ipv6 max-mroute *num*

Command Default

No maximum number of supported routes is configured.

Parameters

num

Configures the maximum number of multicast routes supported.

Modes

VRF configuration mode

Usage Guidelines

The **no** form of this command restores the default (no maximum number of supported routes is configured).

Examples

The following example configures the maximum number of 20 supported IPv6 multicast routes on the VRF named my_vrf.

```
Device(config)# vrf my_vrf
Device(config)# address-family ipv6
Device(config-vrf)# ipv6 max-mroute 20
```

History

Release version	Command history
08.0.10a	This command was introduced.

ipv6 mld access-group

Configures the Multicast Listener Discovery (MLD) report filter policy globally, for a non-defaultvirtual routing and forwarding (VRF) instance, or for an Interface.

Syntax

ipv6 mld access-group *acl-name*

no ip igmp access-group *acl-name*

Command Default

The MLD report filter policy is not configured.

Parameters

acl-name

Specifies an ACL name.

Modes

Global configuration mode

Interface subtype configuration mode

VRF configuration mode

Usage Guidelines

ACL rules are used to configure which multicast group addresses, source addresses, or report and leave messages are to be dropped or allowed. Multicast Group addresses and prefixes are configured as destination IP addresses or prefixes, and the source addresses and prefixes are configured as source IP addresses and prefixes in the extended ACL rules.

If the specified ACL is not configured, the MLD report messages for all multicast group addresses and source addresses are dropped.

If an MLD report filter policy is configured both globally and at the interface level, only the interface filter is applied.

The **no** form of the command disables the configured MLD report filter policy.

Examples

The following example configures the MLD report filter policy globally.

```
device# configure terminal
device(config)# ipv6 mld access-group test1-v6
```

The following example configures the MLD report filter policy for a VE interface.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ipv6 mld access-group test1-v6
```

History

Release version	Command history
09.0.10	This command was introduced.

ipv6 mld group-membership-time

Specifies the multicast listener discovery (MLD) group membership time for the default VRF or for a specified VRF.

Syntax

ipv6 mld group-membership-time *num*

no ipv6 mld group-membership-time *num*

Command Default

An MLD group will remain active on an interface in the absence of a group report for 260 seconds, by default.

Parameters

num

Number in seconds, from 5 through 26000.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of this command resets the group membership time interval to the default of 260 seconds.

Group membership time defines how long a group will remain active on an interface in the absence of a group report.

Examples

This example specifies an MLD group membership time of 2000 seconds for the default VRF.

```
device# configure terminal
device(config)# ipv6 mld group-membership-time 2000
```

This example specifies an MLD group membership time of 2000 seconds for a specified VRF.

```
device# configure terminal
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# ipv6 mld group-membership-time 2000
```

ipv6 mld llqi

Configures the multicast listener discovery (MLD) last listener query interval.

Syntax

ipv6 mld llqi *seconds*

no ipv6 mld llqi *seconds*

Command Default

The MLD last listener query interval is 1 second.

Parameters

seconds

specifies the number in seconds, of MLD group addresses available for all VRFs. The range is 1 through 25; the default is 1.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of this command restores the default MLD last listener query interval.

Any MLD group memberships exceeding the group limit are not processed.

The last listener query interval is the maximum response delay inserted into multicast address-specific queries sent in response to Done messages, and is also the amount of time between multicast address-specific query messages. When a device receives an MLD Version 1 leave message or an MLD Version 2 state-change report, it sends out a query and expects a response within the time specified by the last listener query interval. Configuring a lower value for the last listener query interval allows members to leave groups faster.

Examples

This example configures a last listener query interval of 5 seconds.

```
Device(config)# ipv6 mld llqi 5
```

This example configures a last listener query interval of 5 seconds for a VRF.

```
Device(config)# ipv6 router pim vrf blue
Device(config-ipv6-pim-router-vrf-blue)# ipv6 mld llqi 5
```

ipv6 mld max-group-address

Configures the maximum number of Multicast Listener Discovery (MLD) group addresses.

Syntax

ipv6 mld max-group-address *num*

no ipv6 mld max-group-address *num*

Command Default

Enabled by default.

Parameters

num

Specifies the maximum number of MLD group addresses available, either for the default VRF or for the specified VRF.

Modes

Global configuration mode

Interface subtype configuration mode

VRF configuration mode

Usage Guidelines

Any MLD group memberships exceeding the group limit are not processed.

The **no** form of the command restores the default value.

Examples

The following example configures a maximum of 1000 MLD group addresses for the default VRF.

```
device# configure terminal
device(config)# ipv6 mld max-group-address 1000
```

The following example configures a maximum of 1000 MLD group addresses for the VRF named blue.

```
device# configure terminal
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# ipv6 mld max-group-address 1000
```

The following example configures a maximum of 1000 MLD group addresses for a VE interface.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ipv6 mld max-group-address 1000
```

History

Release version	Command history
09.0.10	Support for this command was added at Interface configuration mode.

ipv6 mld max-response-time

Configures the maximum time a Multicast Listener Discovery (MLD) listener has to respond to queries for the default virtual routing and forwarding (VRF) instance or for a specified VRF.

Syntax

ipv6 mld max-response-time *value*

no ipv6 mld max-response-time *value*

Command Default

If this command is not configured, the maximum time the MLD has to respond to queries is 10 seconds.

Parameters

value

Specifies the maximum time, in seconds, a multicast listener has to respond to queries. Valid values range from 1 through 50. The default is 10 seconds.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of the command sets the maximum time the MLD listener has to respond to queries to the default, 10 seconds..

Examples

The following example configures the maximum time the MLD has to respond to queries to 45 seconds.

```
device# configure terminal
device(config)# ipv6 mld max-response-time 45
```

The following example configures the maximum time the MLD has to respond to queries to 20 seconds for the VRF named vpn1.

```
device# configure terminal
device(config)# vrf vpn1
Device(config-vrf-vpn1)# address-family ipv6
device(config)# ipv6 mld max-response-time 20
```

History

Release version	Command history
08.0.95	This command was updated to change the MLD maximum response time maximum value from 25 seconds to 50 seconds.

ipv6 mld port-version

Configures the multicast listening discovery (MLD) version on a virtual Ethernet interface.

Syntax

ipv6 mld port-version *version-number*

no ipv6 mld port-version

Command Default

The port uses the MLD version configured globally.

Parameters

version-number

Specifies the MLD version, 1 or 2.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command restores the MLD version configured globally.

Examples

This example configures MLD version 2 on virtual Ethernet interface 10.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ipv6 mld port-version 2
```

ipv6 mld query-interval

Configures the frequency at which multicast listening discovery (MLD) query messages are sent.

Syntax

ipv6 mld query-interval *num*

no ipv6 mld query-interval *num*

Command Default

125 seconds

Parameters

num

Number in seconds, from 2 through 3600. The default is 125.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of this command resets the query interval to the default of 125 seconds.

You must specify a query-interval value that is greater than the interval configured by the `ipv6 mld max-response-time` command.

Examples

This example sets the MLD query interval to 50 seconds.

```
Device(config)# ipv6 mld query-interval 50
```

This example sets the MLD query interval for a VRF to 50 seconds.

```
Device(config)# ipv6 router pim vrf blue
Device(config-ipv6-pim-router-vrf-blue)# ipv6 mld query-interval 50
```

ipv6 mld robustness

Configures the number of times that the device sends each multicast listening discovery (MLD) message from an interface.

Syntax

ipv6 mld robustness *num*

no ipv6 mld robustness *num*

Command Default

The MLD robustness is 2 seconds.

Parameters

num

Number in seconds, from 2 through 7. The default is 2.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of this command resets the query interval to the default of 2 seconds.

Configure a higher value to ensure high MLD reliability.

Examples

This example configures the MLD robustness to 3 seconds.

```
Device(config)# ipv6 mld robustness 3
```

This example configures the MLD robustness for a VRF to 3 seconds.

```
Device(config)# ipv6 router pim vrf blue
Device(config-ipv6-pim-router-vrf-blue)# ipv6 mld robustness 3
```

ipv6 mld static-group

Configures one or more physical ports to be a permanent (static) member of a multicast listening discovery (MLD) group based on the range or count.

Syntax

ipv6 mld static-group *multicast-group-addr* [**count** *count-number* | **to** *multicast-group-addr*] [**ethernet** *stackid/slot/portnum*] [**ethernet** *stackid/slot/portnum* **to ethernet** *stackid/slot/portnum*]]

no ipv6 mld static-group *multicast-group-addr* [**count** *count-number* | **to** *multicast-group-addr*] [**ethernet** *stackid/slot/portnum*] [**ethernet** *stackid/slot/portnum* **to ethernet** *stackid/slot/portnum*]]

Command Default

The port is not added to MLD group

Parameters

ip-addr
: The address of the static MLD group.

count *count-number*
: Specifies the number of static MLD groups The range is 2 through 256.

to
: Specifies a range of addresses.

ethernet *stackid/slot/portnum*
: Specifies the ID of the physical port that will be a member of the MLD group. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id. You can configure a single port or a list of ports, separated by a space.

Modes

Interface configuration mode.

Usage Guidelines

The **no** form of this command removes the port or ports from the MLD group.

You can specify as many port numbers as you want to include in the static group.

For a virtual routing interface (ve), specify the physical Ethernet ports on which to add the group address.

Examples

The following example configures two static groups, starting from ff0d::1, without having to receive an MLDv1 report on a virtual Ethernet interface.

```
device# configure terminal
device(config)# interface ethernet 10000 1/1/2
device(config-if-e10000-1/1/2)# ipv6 mld static-group ff0d::1 count 2
```

The following example configures two static MLD groups, starting from ff0d::1, using the **to** keyword.

```
device# configure terminal
device(config)# interface ethernet 10000 1/1/2
device(config-if-e10000-1/1/2)# ipv6 mld static-group ff0d::1 to ff0d::2
```

The following example configures two static MLD groups on virtual ports starting from ff0d::1 using the **count** keyword.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ipv6 mld static-group ff0d::1 count 2 ethernet 1/5/2
```

The following example configures two static groups on virtual ports starting from ff0d::1 using the **to** keyword.

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ipv6 mld static-group ff0d::1 to ff0d::2 ethernet 1/5/2
```

ipv6 mld tracking

Enables multicast listening discovery (MLD) tracking on a virtual interface.

Syntax

ipv6 mld tracking

no ipv6 mld tracking

Command Default

Multicast tracking is disabled on the virtual interface.

Modes

Virtual interface configuration mode

Usage Guidelines

The **no** form of this command restores the default; tracking is disabled.

When MLD tracking is enabled, a Layer 3 device tracks all clients that send membership reports. When a Leave message is received from the last client, the device immediately stops forwarding to the physical port, without waiting 3 seconds to confirm that no other clients still want the traffic.

Examples

This example enables multicast tracking on a virtual interface.

```
device# configure terminal
device(config)# interface ve 13
device(config-vif-13)# ipv6 mld tracking
```

ipv6 mld version

Configures the multicast listening discovery (MLD) version for snooping on an interface.

Syntax

ipv6 mld version { **1** | **2** }

no ipv6 mld version { **1** | **2** }

Command Default

MLD Version 1 is configured.

Parameters

1

Configures MLD version 1.

2

Configures MLD version 2.

Modes

Global configuration mode

Interface configuration mode

IPv6 PIM router configuration mode

Usage Guidelines

The default MLD version when PIM Sparse Mode (PIM-SM) is enabled on an interface is MLDv1. You must configure the version 2 to enable MLDv2.

The **no** form of this command restores the default, that is, 1.

Examples

The following example configures MLD version 2 globally.

```
device(config)# ipv6 mld version 2
```

The following example configures MLD version 2 for a specified VRF.

```
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# ipv6 mld version 2
```

The following example configures MLD version 2 on an interface.

```
device(config)# interface ve 10
device(config-vif-10)# ipv6 mld version 2
```

The following example enables MLDv2.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# ipv6 mld version 2
```

ipv6 mroute

Configures a static IPv6 route to direct multicast traffic along a specific path.

Syntax

ipv6 mroute [**vrf** *vrf-name*] *ipv6-address-prefix/prefix-length* { **ethernet** *unit* / *slot* / *port* | **ve** *num* | **tunnel** *num* } [*cost*] [**distance** *distance-value*] [**name** *name*]

no ipv6 mroute [**vrf** *vrf-name*] *ipv6-address-prefix/prefix-length* { **ethernet** *unit* / *slot* / *port* | **ve** *num* | **tunnel** *num* } [*cost*] [**distance** *distance-value*] [**name** *name*]

Command Default

No static IPv6 multicast route is configured.

Parameters

vrf *vrf-name*
Configures a static mroute for this virtual routing and forwarding (VRF) route.

ipv6-address-prefix/prefix-length
Configures the destination IPv6 address and prefix for which the route should be added.

ethernet *unit* / *slot* /*port*
Configures an Ethernet interface as the route path.

ve *num*
Configures a virtual interface as the route path.

tunnel *num*
Configures a tunnel interface as the route path.

cost
Configures a metric for comparing the route to other static routes in the IPv6 static route table that have the same destination. The range is 1 to 16; the default is 1.

distance *distance-value*
Configures the route's administrative distance. The range is 1 to 255. The default is 1.

name *name*
Name for this static route.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of this command deletes a previously configured static multicast route.

The **ethernet** *unit/slot/port* designation for the destination does not apply to PIM SM.

Connected routes on PIM-enabled interfaces are automatically added to the mRTM table.

Examples

The following example configures a static IPv6 mroute to directly connected network 2020::0/120 on virtual interface ve 130.

```
Device# configure terminal
Device(config)# ipv6 mroute 2020::0/120 ve 130
```

The following example configures a static IPv6 mroute within a VRF called vpn1. The VRF has a route descriptor of 100:200. IPv6 addressing is specified for the VRF. The static multicast route has a destination of 2001:0DB8:0:1::1/120, and the address of the next hop gateway is 5100::192:1:1:1.

```
Device# configure terminal
Device(config)# ipv6 unicast-routing
Device(config)# vrf vpn1
Device (config-vrf-vpn1)# rd 100:200
Device (config-vrf-vpn1)# address-family ipv6
Device (config-vrf-vpn1-ipv6)# ipv6 mroute 2001:0DB8:0:1::1/120 5100::192:1:1:1
```

History

Release version	Command history
08.0.10a	This command was introduced.

ipv6 mroute (Next Hop)

Configures a static IPv6 multicast route (mroute) with a next hop.

Syntax

ipv6 mroute [**vrf** *vrf-name*] *ipv6-address-prefix/prefix-length next-hop address* [*cost*] [**distance** *distance-value*] [**name** *name*]

no ipv6 mroute [**vrf** *vrf-name*] *ipv6-address-prefix/prefix-length next-hop address* [*cost*] [**distance** *distance-value*] [**name** *name*]

Command Default

No next-hop static IPv6 multicast route is configured.

Parameters

vrf *vrf-name*
: Configures a static mroute for this virtual routing and forwarding (VRF) route.

ipv6-address-prefix/prefix-length
: Configures the destination IPv6 address and prefix for which the route should be added.

next-hop address
: Configures a next-hop address as the route path.

cost
: Configures a metric for comparing the route to other static routes in the static route table that have the same destination. The range is 1-16; the default is 1.

distance *distance-value*
: Configures the route's administrative distance. The range is 1 to 255; the default is 1.

name *name*
: Name for this static route.

Modes

VRF configuration mode

Usage Guidelines

The **no** form of this command deletes a previously configured next-hop static IPv6 multicast route.

Examples

The following example configures a next-hop static multicast IPv6 route to network 2020::0/120 with 2022::0/120 as the next hop.

```
Device(config-vrf)# ipv6 mroute 2020::0/120 2022::0/120
```

History

Release version	Command history
08.0.10a	This command was introduced.

ipv6 mroute next-hop-enable-default

Enables the option to use the default multicast route (mroute) to resolve a static IPv6 mroute next hop.

Syntax

ipv6 mroute [**vrf** *vrf-name*] **next-hop-enable-default**

no ipv6 mroute [**vrf** *vrf-name*] **next-hop-enable-default**

Command Default

IPv6 multicast static routes are not resolved using the default multicast static route.

Parameters

vrf *vrf-name*

Configures a static mroute for the specified virtual routing and forwarding (VRF) route.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

Before configuring an IPv6 multicast static route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and must enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

The **no** form of the command disables IPv6 static route next-hop resolution through the default route. If a VRF is configured, the **no** form of the command removes the static IPv6 route configuration from the VRF.

Examples

The following example configures static routing next-hop recursion to three levels (the default). It configures the network default static route and allows it to resolve other static routes.

NOTE

You can specify a level of recursion up to 10.

```
device# configure terminal
device(config)# ipv6 mroute next-hop-recursion
device(config)# ipv6 mroute 0.0.0.0 0.0.0.0 xxx.xxx.xxx.xxx
device(config)# ipv6 mroute next-hop-enable-default
```

The following example enables the VRF named vpn1 to resolve an IPv6 multicast static route through the default IPv6 multicast static route, after configuring IPv6 on the device, setting a route descriptor for the VPN, and specifying IPv6 addressing be used on the VPN.

```
Device# configure terminal
Device(config)# ipv6 unicast-routing
Device(config)# vrf vpn1
Device (config-vrf-vpn1)# rd 100:200
Device (config-vrf-vpn1)# address-family ipv6
Device(config-vrf)# ipv6 mroute next-hop-enable-default
```

History

Release version	Command history
08.0.10a	This command was introduced.

ipv6 mroute next-hop-recursion

Configures the recursion level for resolving an IPv6 multicast static route static.

Syntax

ipv6 mroute [**vrf** *vrf-name*] **next-hop-recursion** [*number*]

no ipv6 mroute [**vrf** *vrf-name*] **next-hop-recursion** [*number*]

Command Default

By default, only the local IPv6 address table is consulted to resolve the next hop toward a multicast static route destination.

Parameters

vrf *vrf-name*

Specifies the VRF that contains the next-hop router (gateway) for the route.

number

Specifies the level of recursion for address lookup. The range is 1 through 10. If no number is specified, the default value is 3.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

Before configuring a static IPv6 route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and must enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

The **no** form of the command disables IPv6 multicast static route next-hop recursion. If a VRF is configured, the **no** form of the command removes the static IPv6 route configuration from the VRF.

Examples

The following example configures recursive IPv6 multicast static route lookup to five levels.

```
device# configure terminal
device(config)# ipv6 mroute next-hop-recursion 5
```

The following example configures recursive lookup to seven levels for the VRF named vpn2. The VRF has a route descriptor of 100:200. IPv6 addressing is specified for the VRF.

```
Device# configure terminal
Device(config)# ipv6 unicast-routing
Device(config)# vrf vpn2
Device (config-vrf-vpn2)# rd 100:200
Device (config-vrf-vpn2)# address-family ipv6
Device (config-vrf-vpn2-ipv6)# ipv6 mroute next-hop-recursion 7
```

History

Release version	Command history
08.0.10a	This command was introduced.

ipv6 mtu

Configures the IPv6 MTU on individual interfaces.

Syntax

ipv6 mtu *unit*

no ipv6 mtu *unit*

Command Default

By default, in non-jumbo mode, the default and maximum Ethernet MTU size is 1500 bytes. When jumbo mode is enabled, the default Ethernet MTU size is 9216.

Parameters

unit

Specifies the maximum length of an IPv6 packet that can betransmitted on a particular interface. Valid values are between 1280 and 1500, or 1280 and 10178 if jumbo mode is enabled.

Modes

Interface configuration mode

Usage Guidelines

The IPv6 maximum transmission unit (MTU) is the maximum length of an IPv6 packet that can be transmitted on a particular interface. If an IPv6 packet is longer than an MTU, the host that originated the packet fragments the packet and transmits its contents in multiple packets that are shorter than the configured MTU.

By default, in non-jumbo mode, the default and maximum Ethernet MTU size is 1500 bytes. When jumbo mode is enabled, the default Ethernet MTU size is 9216. The maximum Ethernet MTU size is 10178.

For ICX 7850 devices, the maximum jumbo frame size supported is 9380. When jumbo mode is enabled, the maximum ethernet MTU size is 9358 bytes.

The IPv6 MTU functionality is applicable to VEs and physical IP interfaces. It applies to traffic routed between networks. The minimum IPv4 and IPv6 MTU values for both physical and virtual interfaces are 1280.

IPv6 MTU cannot be configured globally. It is supported only on devices running Layer 3 software.

The **no** form of the command resets the MTU to the default values.

Examples

The following example configures the MTU on Ethernet interface 1/3/1 as 1280 bytes.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 mtu 1280
```

ipv6 multicast

Globally sets the multicast listening discovery (MLD) snooping mode to active.

Syntax

ipv6 multicast [**active** | **passive**]

no ipv6 multicast [**active** | **passive**]

Command Default

MLD mode is passive.

Parameters

active

Specifies that the device actively sends out MLD queries to identify IPv6 multicast groups on the network, and makes entries in the MLD table based on the group membership reports it receives from the network.

passive

Specifies that the device forwards reports to the router ports which receive queries. MLD snooping in passive mode does not send queries, but does forward queries to the entire VLAN.

Modes

Global configuration mode

Usage Guidelines

If you specify an MLD mode for a VLAN, the MLD mode overrides the global setting.

In active MLD mode, a device actively sends out MLD queries to identify IPv6 multicast groups on the network, and makes entries in the MLD table based on the group membership reports it receives from the network. In passive MLD mode, the device forwards reports to the router ports that receive queries. MLD snooping in passive mode does not send queries, but does forward queries to the entire VLAN.

NOTE
The **ipv6 multicast** command replaces the **ipv6 mld-snooping** command. The **multicast6** command replaces the **mld-snooping** command.

The **no** form of this command when the **active** parameter is used stops the device from sending out MLD queries to identify IPv6 multicast groups on the network. The **no** form of the command when used with the **passive** parameter stops forwarding reports to the router ports which receive queries.

Examples

The following example globally sets the MLD snooping mode to active.

```
device(config)# ipv6 multicast active
```

ipv6 multicast age-interval

Configures the time that group entries can remain in a multicast listening discovery (MLD) group table.

Syntax

ipv6 multicast age-interval*interval*

no ipv6 multicast age-interval*interval*

Command Default

Group entries can remain in the MLD group table for up to 260 seconds.

Parameters

interval

Specifies the time, in seconds, that group entries can remain in the MLD group table. The range is 20 through 26000 seconds. The default is 260 seconds.

Modes

Global configuration mode

Usage Guidelines

When a device receives a group membership report it makes an entry for that group in the MLD group table. You can configure the **ipv6 multicast age-interval** to specify how long the entry can remain in the table before the device receives another group membership report. When multiple devices are connected, they must all be configured for the same age interval, which must be at least twice the length of the query interval, so that missing one report does not stop traffic.

Non-querier age intervals must be the same as the age interval of the querier.

NOTE
When there are two or more possible queriers, it is recommended to configure the IPv6 multicast age interval to 20 seconds more than the default calculated age interval on all switches enabled with MLD snooping. This prevents the aging of groups when the active querier fails.

The **no** form of this command restores the default age interval to 260 seconds.

Examples

The following example configures the MLD group-table age interval to 280 seconds.

```
Device(config)#ipv6 multicast age-interval 280
```

ipv6 multicast flood-unregistered

Enables the flooding of initial packets for unregistered IPv6 multicast groups until hardware entries are programmed. Once the hardware entries are programmed, packets are dropped for unregistered multicast groups.

Syntax

ipv6 multicast flood-unregistered

no ipv6 multicast flood-unregistered

Command Default

Flooding behaviour is not enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the flooding of initial packets for IPv6 multicast frames.

Examples

The following example enables flooding behavior for IPv6 multicast frames.

```
device# configure terminal
device(config)# ipv6 multicast flood-unregistered
```

The following example disables flooding behavior for IPv6 multicast frames.

```
device# configure terminal
device(config)# no ipv6 multicast flood-unregistered
```

History

Release version	Command history
09.0.00	This command was introduced.

ipv6 multicast leave-wait-time

Configures the wait time before stopping traffic to a port when a leave message is received.

Syntax

ipv6 multicast leave-wait-time *num*

no ipv6 multicast leave-wait-time *num*

Command Default

The wait time is 2 seconds.

Parameters

num

Specifies the time, in seconds, the device should wait before stopping traffic to a port when a leave message is received The range is 1 through 5 seconds. The default is 2 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default wait time.

The device sends group-specific queries once per second to ask if any client in the same port still needs the group. Because of internal timer granularity, the actual wait time is between n and (n+1) seconds (n is the configured value).

Examples

This example configures the maximum time a client can wait before responding to a query as 1 second.

```
Device(config)#ipv6 multicast leave-wait-time 1
```

ipv6 multicast max-response-time

Sets the maximum number of seconds a client (IPv6) can wait before responding to a query sent by the device.

Syntax

ipv6 multicast max-response-time *interval*

no ipv6 multicast max-response-time *interval*

Command Default

The wait time is 10 seconds.

Parameters

interval

Specifies the maximum time, in seconds, a client can wait before responding to a query sent by the switch. The range is 1 through 25 seconds. The default is 10 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default maximum interval.

Examples

This example configures the maximum time a client can wait before responding to a query to 5 seconds.

```
device(config)# ipv6 multicast max-response-time 5
```

History

Release version	Command history
08.0.40	This command was modified to increase the range of the maximum response time from 1 through 10 seconds to 1 through 25 seconds.

ipv6 multicast mcache-age

Configures the time for an mcache to age out when it does not receive traffic.

Syntax

ipv6 multicast mcache-age *num*

no ipv6 multicast mcache-age *num*

Command Default

The mcache ages out after the default age-out interval.

Parameters

num

Specifies the time, in seconds, the device should wait before stopping traffic to a port when a leave message is received The range is 60 through 3600 seconds. The default is 180 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default mcache age-out time.

You can set the time for a multicast cache (mcache) to age out when it does not receive traffic. Two seconds before an mcache is aged out, the device mirrors a packet of the mcache to the CPU to reset the age. If no data traffic arrives within two seconds, the mcache is deleted.

NOTE
Multicast mcache may not expire according to the configured time. You may notice a delay of 0 to 60 seconds over the configured value.

NOTE
On devices that support MAC-based MLD snooping, more than one mcache can be mapped to the same destination MAC. When an mcache entry is deleted, the MAC entry may not be deleted. If you configure a lower value, the resource consumed by idle streams is quickly removed, but packets are mirrored to the CPU more frequently. Configure a higher value only when data streams are arriving consistently.

Examples

This example configures the time for an mcache to age out to 180 seconds.

```
device# configure termnial
device(config)# ipv6 multicast mcache-age 180
```

History

Release version	Command history
08.0.60	Added note about multicast mcache expiry.

ipv6 multicast optimization

Enables or disables IP multicast (IPMC) hardware entry optimization for Layer 2 IPv6 multicast flows.

Syntax

ipv6 multicast optimization oif-list all

no ipv6 multicast optimization oif-list all

Command Default

Hardware entry optimization is enabled by default.

Parameters

oif-list

Shares the Output Interface Lists across entries.

all

Specifies all types of Output Interface Lists.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables hardware entry optimization for Layer 2 IPv6 multicast flows. The command must be followed by the **write memory** command and the **reload** command for the changes to take effect.

Examples

The following example re-enables hardware entry optimization for Layer 2 IPv6 multicast flows.

```
device# configure terminal
device(config)# ip multicast optimization oif-list all
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
08.0.40	This command was introduced.

ipv6 multicast per-vlan filter-to-cpu

Enables per VLAN to CPU filtering of MLD and PIMv6 packets for MLD Snooping (PIMv6-SM Snooping).

Syntax

ipv6 multicast per-vlan filter-to-cpu

no ipv6 multicast per-vlan filter-to-cpu

Command Default

Packet filtering to the CPU for a VLAN is disabled..

Modes

Global configuration mode

Usage Guidelines

The command is applicable for ICX 7650 devices only.

After using this command a reload may be required. If a reload is required, this requirement appears after the command is executed.

The **no** form of the command disables packet filtering to the CPU for a VLAN.

Examples

The following example enables packet filtering to the CPU for a VLAN. A reload is required.

```
device# configure terminal
device(config)# ipv6 multicast per-vlan filter-to-cpu

Reload required.  Please write memory and then reload or power cycle.
 Enble of feature reduce ACL scale number and  may impact already configured ACL.
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 multicast query-interval

Configures how often the device sends group membership queries when the multicast listening discovery (MLD) mode is set to active.

Syntax

ipv6 multicast query-interval *interval*

no ipv6 multicast query-interval *interval*

Command Default

Queries are sent every 125 seconds.

Parameters

interval

Specifies the time, in seconds, between queries. The range is 10 through 3600 seconds. The default is 125 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the query interval to 125 seconds.

If the MLD mode is set to active, you can modify the query interval, which specifies how often the device sends group membership queries. When multiple queriers connect together, all queriers should be configured with the same interval.

Examples

The following example configures the query interval to 120 seconds.

```
device#configure terminal
device(config)#ipv6 multicast query-interval 120
```

ipv6 multicast report-control

Limits report forwarding within the same group to no more than once every 10 seconds.

Syntax

ipv6 multicast report-control

no ipv6 multicast report-control

Command Default

A device in passive mode forwards reports and leave messages from clients to the upstream router ports that are receiving queries.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default.

> **NOTE**
> This feature applies only to multicast listening discovery (MLD) version 1. The leave messages are not rate limited.

This rate-limiting does not apply to the first report answering a group-specific query.

Configure this command to alleviate report storms from many clients answering the upstream router query.

Examples

This example limits the rate that reports are forwarded.

```
Device(config)#ipv6 multicast-report-control
```

ipv6 multicast verbose-off

Turns off error or warning messages that are displayed when the device runs out of software resources or when it receives packets with the wrong checksum or groups.

Syntax

ipv6 multicast verbose-off

no ipv6 multicast verbose-off

Command Default

Messages are displayed.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default display of messages.

Examples

This example turns off the display of messages.

```
device# configure terminal
device(config)# ipv6 multicast verbose-off
```

ipv6 multicast version

Configures the multicast listening discovery (MLD) version for snooping globally.

Syntax

ipv6 multicast version [**1** | **2**]

no ipv6 multicast version

Command Default

MLD version 1 is configured.

Parameters

1

Configures MLD version 1.

2

Configures MLD version 2.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the version to MLD version 1.

You can configure the MLD version for individual VLANs, or individual ports within VLANs. If no MLD version is specified for a VLAN, the globally configured MLD version is used. If an MLD version is specified for individual ports in a VLAN, those ports use that version instead of the version specified for the VLAN or the globally specified version. The default is MLD version 1.

Examples

This example specifies MLD version 2 on a device.

```
Device(config)#ipv6 multicast version 2
```

ipv6 multicast-boundary

Defines multicast boundaries for PIM-enabled interfaces.

Syntax

ipv6 multicast-boundary *acl-spec*

no ipv6 multicast-boundary *acl-spec*

Command Default

Boundaries are not defined.

Parameters

acl-spec

Specifies the number or name identifying an access control list (ACL) that controls the range of group addresses affected by the boundary.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command removes the boundary on a PIM-enabled interface.

You can use standard ACL syntax to configure an access list.

Examples

This example defines a boundary named MyAccessList for a PIM-enabled interface.

```
Device(config)# interface ethernet 1/2/2
Device(config-if-e1000-1/2)#ipv6 multicast-boundary MyAccessList
```

ipv6 multicast-routing optimization

Enables or disables IP multicast (IPMC) entry optimization for Layer 3 IPv6 multicast flows.

Syntax

ipv6 multicast-routing optimization oif-list all

no ipv6 multicast-routing optimization oif-list all

Command Default

IPMC entry optimization is enabled by default.

Parameters

oif-list

Shares the Output Interface Lists across entries.

all

Specifies all types of Output Interface Lists.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables IPMC entry optimization for IPv6 multicast flows. Multicast routing entries are deleted and recreated when optimization is enabled or disabled on all VRFs. The command must be followed by the **write memory** command and the **reload** command for the changes to take effect.

Examples

The following example re-enables hardware entry optimization for IPv6 multicast flows.

```
device(config)# ipv6 multicast-routing optimization oif-list all
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
08.0.40	This command was introduced.

ipv6 multicast-routing rpf-check mac-movement

Triggers Reverse Path Forwarding (RPF) check on MAC movement for directly connected sources and sends a MAC address movement notification to the Protocol Independent Multicast (PIM) module which results in PIM convergence.

Syntax

ipv6 multicast-routing rpf-check mac-movement

no ipv6 multicast-routing rpf-check mac-movement

Command Default

RPF check on MAC movement for directly connected sources is not enabled.

Modes

Global configuration mode

Usage Guidelines

PIM convergence on MAC movement is applicable only in a topology where the multicast source port and PIM routers are in the same Layer 2 domain.

IPv6 PIM Dense mode is not supported for PIM convergence on MAC movement.

The **no** form of the command disables RPF check on MAC movement for directly connected sources.

Examples

The following example configures RPF check on MAC movement for directly connected sources.

```
device(config)# ipv6 multicast-routing rpf-check mac-movement
```

History

Release version	Command history
08.0.10h	This command was introduced.
08.0.30	Support for the **ipv6 multicast-routing rpf-check mac-movement** command was added in FastIron 08.0.30 and later releases.

ipv6 nd dad attempts

Configures the number of consecutive neighbor solicitation messages that duplicate address detection (DAD) sends on an interface.

Syntax

ipv6 nd dad attempts *number*

no ipv6 nd dad attempts *number*

Command Default

By default, duplicate address detection sends three neighbor solicitation messages without any follow-up messages.

Parameters

number

Specifies the number of consecutive neighbor solicitation messages that duplicate address detection sends on an interface. Valid values are 0 to 255. The default value is 3. Configuring a value of 0 disables duplicate address detection processing on the specified interface.

Modes

Interface configuration mode

Usage Guidelines

DAD is not currently supported with IPv6 tunnels. Make sure tunnel endpoints do not have duplicate IP addresses.

The **no** form of the command restores the number of messages to the default value of 3.

Examples

The following example configures the number of consecutive neighbor solicitation messages that duplicate address detection sends on an interface to 100.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd dad attempts 2
```

ipv6 nd local-proxy

Configures IPv6 neighbor discovery proxy on a router interface.

Syntax

ipv6 nd local-proxy

Command Default

This command is disabled by default.

Modes

Interface Configuration mode

Examples

The following example configures ND proxy on the ethernet interface.

```
Router# configure terminal
Router(config)# interface ethernet 1/1/3
Router(config-if-e1000-1/1/3)# ipv6 nd local-proxy
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 nd managed-config-flag

Sets the managed address configuration flag.

Syntax

ipv6 nd managed-config-flag

no ipv6 nd managed-config-flag

Command Default

By default, the managed address configuration flag is not set in router advertisement messages.

Modes

Interface configuration mode

Usage Guidelines

An IPv6 router advertisement message includes the managed address configuration flag. This flag indicates to hosts on a local link if they should use the stateful autoconfiguration feature to get IPv6 addresses for their interfaces. If the flag is set, the hosts use stateful autoconfiguration to get addresses as well as non-IPv6-address information. If the flag is not set, the hosts do not use stateful autoconfiguration to get addresses and if the hosts can get non-IPv6-address information from stateful autoconfiguration is determined by the setting of the Other Stateful Configuration flag.

The **no** form of the command removes the managed address configuration flag from the router advertisement messages.

Examples

The following example sets the managed address configuration flag.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd managed-config-flag
```

ipv6 nd ns-interval

Configures the interval in milliseconds at which duplicate address detection sends a neighbor solicitation message on an interface.

Syntax

ipv6 nd ns-interval *interval*

no ipv6 nd ns-interval *interval*

Command Default

By default, duplicate address detection sends a neighbor solicitation message every 1000 milliseconds.

Parameters

interval

Specifies the interval in milliseconds at which duplicate address detection sends a neighbor solicitation message on an interface. Valid values are 0 to 4294967295 milliseconds. The default value is 1000 milliseconds.

Modes

Interface configuration mode

Usage Guidelines

RUCKUS does not recommend very short intervals in normal IPv6 operation. When a non-default value is configured, the configured time is both advertised and used by the router itself.

The **no** form of the command restores the interval to the default value of 1000 milliseconds.

Examples

The following example configures the interval between the transmission of the two messages to 9 seconds.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd ns-interval 9000
```

ipv6 nd other-config-flag

Configures the hosts can use stateful autoconfiguration to get non-IPv6-address information.

Syntax

ipv6 nd other-config-flag

no ipv6 nd other-config-flag

Command Default

By default, the other stateful configuration flags are not set in router advertisement messages.

Modes

Interface configuration mode

Usage Guidelines

The other stateful configuration flag indicates to hosts on a local link if they can get non-IPv6 address autoconfiguration information. If the flag is set, the hosts can use stateful autoconfiguration to get non-IPv6-address information.

When determining if hosts can use stateful autoconfiguration to get non-IPv6-address information, a set Managed Address Configuration flag overrides an unset Other Stateful Configuration flag. In this situation, the hosts can obtain nonaddress information. However, if the Managed Address Configuration flag is not set and the Other Stateful Configuration flag is set, then the setting of the Other Stateful Configuration flag is used.

The **no** form of the command other stateful configuration flag.

Examples

The following example sets the other stateful configuration flag.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ipv6 nd other-config-flag
```

ipv6 nd prefix-advertisement

Configures the prefixes to be included in router advertisement messages.

Syntax

ipv6 nd prefix-advertisement *ipv6-address valid-lifetime preffered-lifetime* [**auto-config**] [**onlink**]

no ipv6 nd prefix-advertisement *ipv6-address valid-lifetime preffered-lifetime* [**auto-config**] [**onlink**]

Command Default

By default, router advertisement messages include prefixes configured as addresses on router interfaces using the **ipv6 address** command.

Parameters

ipv6-address

Specifies the IPv6 addres in hexadecimal using 16-bit values between colons as documented in RFC 2373 along with the prefix length in the format X:X::X:X/M.

valid-lifetime

Configures the time interval (in seconds) in which the specified prefix is advertised as valid. Valid values are 0 through 4294967295 seconds. The default is 2592000 seconds (30 days). When the timer expires, the prefix is no longer considered to be valid.

preffered-lifetime

Configures the time interval (in seconds) in which the specified prefix isadvertised as preferred. Valid values are 0 through 4294967295 seconds. The default is 604800 seconds (7 days). When the timer expires, the prefix is no longer considered to be preferred.

auto-config

If this flag is set, the stateless auto configuration feature can use the specified prefix in the automatic configuration of 128-bit IPv6 addresses for hosts on the local link, provided the specified prefix is aggregatable, as specified in RFC 2374.

onlink

If this flag is set, the specified prefix is assigned to the link upon which it is advertised. Nodes sending traffic to addresses that contain the specified prefix consider the destination to be reachable on the local link.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command removes a prefix from the router advertisement messages sent from a particular interface.

Examples

The following example configures to advertise the prefix 2001:DB8:a487:7365::/64 in router advertisement messages sent out on Ethernet interface 1/3/1 with a valid lifetime of 1000 seconds, a preferred lifetime of 800 seconds, and the Onlink and Autoconfig flags set.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd prefix-advertisement 2001:DB8:a487:7365::/64 1000 800 onlink
autoconfig
```

ipv6 nd proxy

Enables IPv6 Neighbor Discovery(ND) proxy on a router.

Syntax

ipv6 nd proxy

Command Default

IPv6 Neighbor Discovery proxy is disabled by default.

Modes

Global Configuration mode

Examples

The following example enables the IPv6 neighbor discovery proxy on an IPv6 enabled router.

```
Router# configure terminal
Router(config)# ipv6 nd proxy
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 nd proxy-disable

Disables the Neighbor Discovery proxy on an individual port or range of ports.

Syntax

ipv6 nd proxy-disable

Command Default

This command is disabled by default.

Modes

Interface configuration mode

Examples

The following example disables neighbor discovery proxy.

```
Router# configure terminal
Router(config)# interface ethernet 1/2/1
Router(config-if-e10000-1/2/1)# ipv6 nd proxy-disable
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 nd ra-dns-server

Configures the IPv6 router advertisement (RA) of Domain Name System (DNS) server addresses and the lifetime multiplier on an interface.

Syntax

ipv6 nd ra-dns-server *ipv6-address* [**lifetime-multiplier** *decimal*]

no ipv6 nd ra-dns-server *ipv6-address* [**lifetime-multiplier** *decimal*]

Command Default

Recursive DNS server (RDNSS) address and lifetime multiplier information is not configured. The DNS server is not advertised in IPv6 RA messages.

Parameters

ipv6-address

Specifies the IPv6 address of the DNS server to be advertised in RA messages.

lifetime-multiplier *decimal*

Specifies the value of the maximum RA interval (the maximum time allowed between sending unsolicited RA messages for DNS name resolution). The calculated lifetime value = configured value * max RA interval. Valid values range from 1 through 3. The default is 3 (that is, three times the configured maximum RA interval).

Modes

Interface configuration mode

Usage Guidelines

You can configure a maximum of 15 RDNSS addresses and corresponding lifetime multiplier values in a given instance.

The **no** form of the command removes the configured DNS server address and lifetime multiplier value.

Examples

The following example configures a DNS server with the IPv6 address 2001::1 to be advertised in RA messages, with a lifetime multiplier of 2.

```
device# configure terminal
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# ipv6 nd ra-dns-server 2001::1 lifetime-multiplier 2
```

History

Release version	Command history
08.0.80	This command was introduced.

ipv6 nd ra-domain-name

Configures the IPv6 router advertisement (RA) of Domain Name System (DNS) suffixes and the lifetime multiplier on an interface.

Syntax

ipv6 nd ra-domain-name *string* [**lifetime-multiplier** *decimal*]

no ipv6 nd ra-domain-name *string* [**lifetime-multiplier** *decimal*]

Command Default

The DNS suffix is not advertised in IPv6 RA messages.

Parameters

string

Specifies the domain name of the DNS suffix.

lifetime-multiplier *decimal*

Specifies the value of the maximum RA interval (the maximum time that can be allowed between sending unsolicited RA messages for DNS name resolution). The calculated lifetime value = configured value * max RA interval. Valid values range from 1 through 3. The default is 3 (that is. three times the configured maximum RA interval).

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables the advertisement of the DNS suffix in IPv6 RA messages.

Examples

The following example configures the domain name of a DNS suffix as “abc.net” and sets a lifetime multiplier value of 1 for an Ethernet interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# ipv6 nd ra-domain-name abc.net lifetime-multiplier 1
```

History

Release version	Command history
08.0.80	This command was introduced.

ipv6 nd ra-hop-limit

Sets the hop limit for router advertisement messages.

Syntax

ipv6 nd ra-hop-limit *number*

no ipv6 nd ra-hop-limit *number*

Command Default

The default hop is 64.

Parameters

number

Specifies the number of hops. Valid values are 0 to 255. The default value is 64.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the commands resets the number of hops to the default value of 64.

Examples

The following example sets the number of hops to 100.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd ra-hop-limit 100
```

ipv6 nd ra-interval

Configures the interval at which an interface sends router advertisement messages.

Syntax

ipv6 nd ra-interval [**range** *min-interval max-interval* | *interval*]

no ipv6 nd ra-interval [**range** *min-interval max-interval* | *interval*]

Command Default

By default, an interface sends a router advertisement message every 200 seconds.

Parameters

range *min-interval max-interval*

Configures an interval range. The min-range-value specifies the minimum number of seconds allowed between sending unsolicited multicast router advertisements from the interface. The default is 0.33 times the max-range-value if the max-range-value is greater than or equal to 9 seconds. Otherwise, the default is the value specified by the max-range-value. The min-range-value can be a number between -3 - (.75 x max range value). The max-range-value parameter specifies the maximum number of seconds allowed between sending unsolicited multicast router advertisements from the interface. This number can be between 4 - 1800 seconds and must be greater than the min-range-value x 1.33. The default is 600 seconds.

interval

Configures the interval. Valid values are 3 to1800 seconds. The default is 200 seconds. The actual RA interval will be from .5 to 1.5 times the configured or default value.

Modes

Interface configuration mode

Usage Guidelines

RUCKUS recommends that the interval between router advertisement transmission be less than or equal to the router lifetime value if the router is advertised as a default router.

The **no** form of the command resets the interface at which an interface sends a router advertisement message to 200 seconds.

Examples

The following example configures the interval at which an interface sends a router advertisement message as 300 seconds.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd ra-interval 300
```

The following example configures the interval at which an interface sends a router advertisement message to a range.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd ra-interval range 33 55
```

ipv6 nd ra-lifetime

Configures the value (in seconds) indicates if the router is advertised as a default router on an interface.

Syntax

ipv6 nd ra-lifetime *time*

no ipv6 nd ra-lifetime *time*

Command Default

By default, the router lifetime value included in router advertisement messages sent from an interface is 1800 seconds.

Parameters

time

Specifies the value (in seconds) indicates if the router is advertised as a default router on an interface. Valid values are 0 to 9000 seconds. The default is 1800 seconds. If you set the value of this parameter to 0, the router is not advertised as a default router on an interface.

Modes

Interface configuration mode

Usage Guidelines

The "router lifetime" value, which is included in router advertisements sent from a particular interface.

If you set this parameter to a value that is not 0, the router is advertised as a default router on the interface.

RUCKUS recommends that the interval between router advertisement transmission be less than or equal to the router lifetime value if the router is advertised as a default router.

The **no** form of the command resets the value to 1800 seconds.

Examples

The following example configures the router lifetime value to 1900 seconds on Ethernet interface 1/3/1.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd ra-lifetime 1900
```

ipv6 nd reachable-time

Configures the duration that a router considers a remote IPv6 node reachable.

Syntax

ipv6 nd reachable-time *duration*

no ipv6 nd reachable-time *duration*

Command Default

By default, a router interface uses the value of 30 seconds.

Parameters

duration

Specifies the duration (in seconds) that a router considers a remote IPv6 node reachable. Valid values are 0 to 3600 seconds. The default is 30 seconds.

Modes

Interface configuration mode

Usage Guidelines

The router advertisement messages sent by a router interface include the amount of time specified by the ipv6 nd reachable-time command so that nodes on a link use the same reachable time duration. By default, the messages include a default value of 0.

RUCKUS does not recommend configuring a short reachable time duration, because a short duration causes the IPv6 network devices to process the information at a greater frequency.

The actual reachable time will be from 0.5 to 1.5 times the configured or default value.

The **no** form of the command resets the duration that a router considers a remote IPv6 node reachable as 30 seconds.

Examples

The following example configures the reachable time of 40 seconds for Ethernet interface 1/3/1.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd reachable-time 40
```

ipv6 nd router-preference

Configures the IPv6 router advertisement preference value to low or high (medium is the default). IPv6 router advertisement preference enables IPv6 router advertisement (RA) messages to communicate default router preferences from IPv6 routers to IPv6 hosts in network topologies where the host has multiple routers on its Default Router List.

Syntax

ipv6 nd router-preference [**low** | **medium** | **high**]

no ipv6 nd router-preference [**low** | **medium** | **high**]

Command Default

The IPv6 router advertisement preference value is set to medium.

Parameters

low

The two-bit signed integer (11) indicating the preference value ''low".

medium

The two-bit signed integer (00) indicating the preference value "medium". This is the default preference value.

high

The two-bit signed integer (01) indicating the preference value "high".

Modes

Interface configuration mode

Usage Guidelines

The **no** form disables IPv6 router preference.

Examples

The following example configures IPv6 RA preference for IPv6 routers:

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e10000-1/2/3)# ipv6 nd router-preference low
```

History

Release version	Command history
08.0.10	This command was introduced.

ipv6 nd stale-time

Configures the stale state timeout for IPv6 neighbors on an interface.

Syntax

ipv6 nd stale-time *stale-time-seconds*

no ipv6 nd stale-time *stale-time-seconds*

Command Default

The timeout period is 7200 seconds (2 hours).

Parameters

stale-time-seconds

Specifies the time, in seconds. Valid values range from 120 through 7200 seconds. The default is 7200.

Modes

Interface configuration mode

Usage Guidelines

The configured timeout value is applicable for new neighbors created after the stale state timeout value is altered. The stale state timeout value is not modified for existing neighbors. After the configured stale state interval expires, unused IPv6 neighbors are removed.

The **no** form of the command removes the configured stale state timeout and restores the default.

Examples

The following example sets the stale state timeout period to 180 seconds for an Ethernet interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# ipv6 nd stale-time 180
```

The following example restores the stale state timeout period to the default of 7200 seconds for a VE interface.

```
device# configure terminal
device(config)# interface ve 217
device(config-vif-217)# no ipv6 nd stale-time 180
```

History

Release version	Command history
08.0.95	This command was introduced.

ipv6 nd suppress-ra

Disables the sending of router advertisement messages on an interface.

Syntax

ipv6 nd suppress-ra

no ipv6 nd suppress-ra

Command Default

Sending of router advertisement messages is enabled on Ethernet interfaces and disabled on non-LAN interfaces.

Modes

Interface configuration mode

Usage Guidelines

If IPv6 unicast routing is enabled on an Ethernet interface, by default, this interface sends IPv6 router advertisement messages. However, by default, non-LAN interface types, for example, tunnel interfaces, do not send router advertisement messages.

The **no** form of the command enables the sending of router advertisement messages on a interface.

Examples

The following example disables the sending of router advertisement messages on an Ethernet interface.

```
device(config)# interface ethernet 1/3/1
device(config-if-e1000-1/3/1)# ipv6 nd suppress-ra
```

The following example enables the sending of router advertisement messages on a tunnel interface.

```
device(config)# interface tunnel 1
device(config-tnif-1)# no ipv6 nd suppress-ra
```

ipv6 nd suppress-ra address

Suppresses the advertisement of specified IPv6 addresses for router advertisement (RA) messages on an interface.

Syntax

ipv6 nd suppress-ra address { **all** | *ipv6-address* }

no ipv6 nd suppress-ra address { **all** | *ipv6-address* }

Command Default

IPv6 addresses are not suppressed.

Parameters

all

Specifies all IPv6 addresses.

ipv6-address

Specifies an IPv6 address.

Modes

Interface configuration mode

Usage Guidelines

Prefix information in RA messages includes the IPv6 addresses configured on the interface.

The **no** form of the command restores the default so that IPv6 addresses are not suppressed in RA messages.

Examples

The following example suppresses all IPv6 addresses configured on the interface in RA messages.

```
device# configure terminal
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# ipv6 nd suppress-ra address all
```

The following example suppresses the IPv6 address 2001::1 in RA messages. All other IPv6 addresses configured on the interface are advertised.

```
device# configure terminal
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# ipv6 nd suppress-ra address 2001::1
```

History

Release version	Command history
08.0.80	This command was introduced.

ipv6 neighbor

Adds a static entry to the IPv6 neighbor discovery cache.

Syntax

ipv6 neighbor *ipv6-address* [**ve** *ve-num*] **ethernet** *stack/ slot/port link-layer-address*

no ipv6 neighbor *ipv6-address* [**ve** *ve-num*] **ethernet** *stack/ slot/port link-layer-address*

Command Default

A static entry is not added to the IPv6 neighbor discovery cache.

Parameters

ipv6-address
: Specifies the IPv6 address of the neighbor.

ve *ve-num*
: Specifies the outgoing interface type as VE.

ethernet *stack/ slot/port*
: Specifies the outgoing interface type as Ethernet. If you specify VE, specify the Ethernet interface associated with the VE.

link-layer-address
: Specifies the 48-bit hardware address of the neighbor.

Modes

Global configuration mode

Usage Guidelines

In some special cases, a neighbor cannot be reached using the neighbor discovery feature. In this situation, you can add a static entry to the IPv6 neighbor discovery cache, which causes a neighbor to be reachable at all times without using neighbor discovery. (A static entry in the IPv6 neighbor discovery cache functions like a static ARP entry in IPv4.)

A port that has a statically assigned IPv6 entry cannot be added to a VLAN.

Static neighbor configurations will be cleared on secondary ports when a LAG is formed.

If you attempt to add an entry that already exists in the neighbor discovery cache, the software changes the already existing entry to a static entry.

The **no** form of the command removes a static IPv6 entry from the IPv6 neighbor discovery cache.

Examples

The following example adds a static entry for a neighbor with the IPv6 address 2001:DB8:2678:47b and linklayer address 0000.002b.8641 that is reachable through Ethernet interface 1/3/1.

```
device(config)# ipv6 neighbor 2001:DB8:2678:47b ethernet 1/3/1 0000.002b.8641
```

ipv6 neighbor inspection

Configures the static neighbor discovery (ND) inspection entries.

Syntax

ipv6 neighbor inspection *ipv6-address mac-address*

no ipv6 neighbor inspection *ipv6-address mac-address*

Command Default

Static ND inspection entries are not configured.

Parameters

ipv6-address
Configures the IPv6 address of the host.

mac-address
Configures the MAC address of the host.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

Use the **ipv6 neighbor inspection** command to manually configure static ND inspection entries for hosts on untrusted ports. During ND inspection, the IPv6 address and MAC address entries in the ND inspection table are used to validate the packets received on untrusted ports.

The **no** form of the command disables static ND inspection entries.

Examples

The following example displays the configuration of a static ND inspection entry.

```
device(config)# ipv6 neighbor inspection 2001::1 0000.1234.5678
```

The following example displays the configuration of a static ND inspection entry for VRF 3.

```
device(config)# vrf 3
device(config-vrf-3)# ipv6 neighbor inspection 2001::100 0000.0000.4567
```

History

Release version	Command history
08.0.20	This command was introduced.

ipv6 neighbor inspection vlan

Configures and enables Neighbor Discovery (ND) inspection on a VLAN, or a range of VLANs, to inspect the IPv6 packets from untrusted ports.

Syntax

ipv6 neighbor inspection vlan *vlan-id* [**to** *vlan-id* ...]

no ipv6 neighbor inspection vlan *vlan-id* [**to** *vlan-id* ...]

Command Default

IPv6 ND inspection is not enabled.

Parameters

vlan-id
: Configures the ID of the VLAN.

to *vlan-id*
: Specifies a range of VLANs.

Modes

Global configuration mode

VRF configuration mode

Usage Guidelines

When you configure this command, IPv6 packets from untrusted ports on the VLAN undergo ND inspection.

All VLANs included in the range when using the **to** keyword must be valid VLANs. Otherwise an error will occur.

The **no** form of the command disables ND inspection.

Examples

The following example enables ND inspection on VLAN 10.

```
device# configure terminal
device(config)# ipv6 neighbor inspection vlan 10
```

The following example enables ND inspection on VLAN 10 of VRF 3.

```
device# configure terminal
device(config)# vrf 3
device(config-vrf-3)# ipv6 neighbor inspection vlan 10
```

The following example configures VLANs 100 through 150, VLAN 160, and VLANs 170 through 200 and enables ND inspection on all of the configured VLANs.

```
device# configure terminal
device(config)# vlan 100 to 150
device(config-mvlan-100-150)# exit
device(config)# vlan 150 to 200
device(config-mvlan-150-200)# exit
device(config)# ipv6 neighbor inspection vlan 100 to 150 160 170 to 200
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.80	The **to** keyword was added to enable ND inspection on a range of VLANs by using a single command.

ipv6 options drop

Configures the IPv6 options drop packet rule so that IPv6 packets that have extension headers, such as hop-by-hop and destination, are dropped.

Syntax

ipv6 options drop

no ipv6 options drop

Command Default

The IPv6 drop packet rule and hop-by-hop header options are not configured.

Modes

Global configuration mode

Usage Guidelines

For hop-by-hop headers, option types 00, 01, 04, 194, 195, and 201 are permitted. For destination headers, option types 00, 01, 04, and 201 are permitted. For all other options, traffic is dropped.

NOTE
Dropping IPv6 options is not supported on ICX 7550 and ICX 7850devices.

The **no** form of the command disables the IPv6 drop packet rule and hop-by-hop header options.

Examples

The following example enables the IPv6 options drop packet rule for hop-by-hop and destination header options.

```
device# configure terminal
device(config)# ipv6 options drop
```

The following example disable the IPv6 options drop packet rule for hop-by-hop and destination header options.

```
device# configure terminal
device(config)# no ipv6 options drop
```

History

Release version	Command history
09.0.10	This command was introduced.

ipv6 ospf active

Sets a specific OSPFv3 interface to active.

Syntax

ipv6 ospf active

Modes

Interface subtype configuration mode

Usage Guidelines

Use the **ipv6 ospf active** command on each interface participating in adjacency formation. This command overrides the global passive setting on that interface, and enables transmission of OSPFv3 control packets.

Examples

The following example sets a specific OSPFv3 virtual Ethernet (VE) interface to active.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf active
```

ipv6 ospf area

Enables OSPFv3 on an interface.

Syntax

ipv6 ospf area *area-id* | *ip-addr*

no ipv6 ospf area

Command Default

OSPFv3 is disabled.

Parameters

area-id

Area ID in dotted decimal or decimal format.

ip-addr

Area ID in IP address format.

Modes

Interface subtype configuration mode

Usage Guidelines

This command enables an OSPFv3 area on the interface to which you are connected.

The **no** form of the command disables OSPFv3 on this interface.

Examples

The following example enables a configured OSPFv3 area named 0 on a specific OSPFv3 virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf area 0
```

ipv6 ospf authentication

Configures HMAC-SHA-1 or HMAC-SHA-256 authentication for Open Shortest Path First version 3 (OSPFv3).

Syntax

ipv6 ospf authentication { **hmac-sha-1** | **hamac-sha-256**} **key-id** *key-id-val* **key** *key-string*

no ipv6 ospf authentication [**HMAC-SHA-1** | **HMAC-SHA-256**] **key-id** *key-id-val* **key** *key-string*

Command Default

HMAC-SHA-1 or HMAC-SHA-256 authentication is disabled by default.

Parameters

hmac-sha-1
Specifies the HMAC-SHA-1 authentication.

hmac-sha-256
Specifies the HMAC-SHA-256 authentication.

key-id *key-id-val*
Identifies the number of the HMAC-SHA-1 or HMAC-SHA-256 algorithm. The number can be from 1 through 255.

key *key-string*
Sets the corresponding key string to be used with the HMAC-SHA-1 or HMAC-SHA-256 algorithm.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the HMAC-SHA-1 or HMAC-SHA-256 authentication configuration on the OSPFv3 interface to which you are connected.

The **no** form of the command removes the HMAC-SHA-1 or HMAC-SHA-256 authentication configuration from the OSPFv3 interface.

Examples

The following example sets HMAC-SHA-1 authentication with key ID 10 and the password key "mypasswordkey", on the OSPFv3 interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf authentication hmac-sha-1 key-id 10 key mypasswordkey
```

History

Release	Command History
08.0.70	This command was introduced.

ipv6 ospf authentication disable

Removes the authentication configuration settings on a specific interface in an Open Shortest Path First version 3 (OSPFv3) area.

Syntax

ipv6 ospf authentication disable

Modes

Interface subtype configuration mode

Usage Guidelines

Where an area is configured with area authentication, all interfaces within the area are configured to use these authentication parameters. This command removes the authentication configuration settings on a specific interface within the area.

Examples

The following example removes the authentication configuration settings on the selected interface within the OSPFv3 area.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-11)# ipv6 ospf authentication disable
```

History

Release	Command History
08.0.70	This command was introduced.

ipv6 ospf authentication key-activation-wait-time

Configures the time before an authentication key change is activated for an Open Shortest Path First version 3 (OSPFv3) interface.

Syntax

ipv6 ospf authentication key-activation-wait-time *wait-time*

no ipv6 ospf authentication key-activation-wait-time *wait-time*

Parameters

wait-time

Specifies the time before an authentication key change takes place. The wait time can be set from 0 through 14400 seconds.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the wait time before an authentication key change takes place on the interface to which you are connected.

The **no** form of the command resets the wait time to the default of 300 seconds.

Examples

The following example sets the wait time before an authentication key change to 600 seconds on the OSPFv3 interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf authentication key-activation-wait-time 600
```

History

Release	Command History
08.0.70	This command was introduced.

ipv6 ospf authentication keychain

Configures Open Shortest Path First version 3 (OSPFv3) authentication using the keychain authentication module.

Syntax

ipv6 ospf authentication keychain *keychain-name*

no ipv6 ospf authentication keychain *keychain-name*

Parameters

keychain-name

Specifies the name of the keychain that OSPFv3 uses to authenticate the packets.

Modes

Interface subtype configuration mode

Usage Guidelines

The keychain authentication module provides OSPFv3 protocol the option to automatically change the key ID and cryptographic algorithm without manual intervention.

With this configuration, OSPFv3 requests the keychain authentication module for all active keys in the keychain and selects the keys for sending and accepting the packets.

The **no** form of the command removes keychain authentication from the OSPFv3 interface configuration.

Examples

The following example configures OSPFv3 to use the keychain authentication module with the "xtreme" keychain.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-11)# ipv6 ospf authentication keychain xtreme
```

History

Release	Command History
08.0.70	This command was introduced.

ipv6 ospf authentication rfc6506

Configures authentication in accordance with RFC 6506 for Open Shortest Path First version 3 (OSPFv3).

Syntax

ipv6 ospf authentication rfc6506

no ipv6 ospf authentication rfc6506

Command Default

RFC 6506 authentication is disabled by default.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset authentication in accordance with RFC 6506 on the OSPFv3 interface to which you are connected. This may be required for backward compatibility. Although RFC 6506 is superseded by RFC 7166, some vendors continue to support RFC 6506. To ensure interoperability with vendor equipment that supports RFC 6506, use this command in conjunction with the required authentication options.

The **no** form of the command removes the RFC 6506 authentication configuration from the OSPFv3

Examples

The following example sets HMAC-SHA-1 authentication, in accordance with RFC 6506, on the OSPFv3 interface. HMAC-SHA-1 authentication is enabled using key-id "1", key "0 1234567890123456789", and a key activation wait time of 5 seconds.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf authentication rfc6506
device(config-vif-1)# ipv6 ospf authentication hmac-sha-1 key-id 1 key 0 1234567890123456789
device(config-vif-1)# ipv6 ospf authentication key-activation-wait-time 5
```

History

Release	Command History
08.0.70	This command was introduced.

ipv6 ospf bfd

Enables Bidirectional Forwarding Detection (BFD) sessions and configures BFD session parameters for an Open Shortest Path First Version 3 (OSPFv3) interface.

Syntax

ipv6 ospf bfd[**disable**|**min-tx***transmit-time***min-rx***receive-time***multiplier***number*|**passive**]

no ipv6 ospf bfd[**disable**|**min-tx***transmit-time***min-rx***receive-time***multiplier***number*|**passive**]

Command Default

BFD is not configured for OSPFv3.

Parameters

disable

Disables BFD on the interface.

min-tx*transmit-time*

Specifies the interval, in milliseconds, a device waits to send control packets to BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

min-rx*receive-time*

Specifies the interval, in milliseconds, a device waits to receive control packets from BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

multiplier*number*

Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD determines that the connection to that peer is down. Valid values range from 2 through 50. The default is 3.

passive

Specifies that the BFD session operates in passive mode.

Modes

Interface subtype configuration mode

Usage Guidelines

Using this command overrides global settings configured using the **bfd** command in OSPFv3 router configuration mode.

This command is supported for ICX 7850 devices only.

The **no** form of the command disables BFD sessions on the interface.

The **no ipv6 ospf bfdmin-tx***transmit-time***min-rx***receive-time***multiplier***number** command removes configured BFD session parameters and restores the default parameters.

The **no ipv6 ospf bfd passive** command removes BFD from the OSPFv3 interface. To unconfigure passive mode for the interface, use the **ipv6 ospf bfd** command.

Examples

The following example enables BFD for an OSPFv3-enabled Ethernet interface and sets the BFD session timer values.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# ip address 10.0.0.2/24
device(config-if-e40000-1/1/1)# ipv6 ospf bfd
device(config-if-e40000-1/1/1)# ipv6 ospf bfd min-tx 100 min-rx 300 multiplier 5
```

The following example enables BFD for an OSPFv3-enabled Ethernet interface and sets the BFD session to passive.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# ipv6 enable
device(config-if-e40000-1/1/1)# ipv6 ospf bfd
device(config-if-e40000-1/1/1)# ipv6 ospf bfd passive
```

The following example disables BFD for an OSPFv3-enabled Ethernet interface if it has been enabled.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e40000-1/1/1)# ipv6 ospf bfd disable
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 ospf cost

Configures cost for a specific OSPFv3 interface.

Syntax

ipv6 ospf cost *value*

no ipv6 ospf cost

Command Default

Cost value is 1.

Parameters

value

Cost value. Valid values range from 1 through 65535. The default is 1.

Modes

Interface subtype configuration mode

Usage Guidelines

Use this command to set or reset the OSPFv3 cost on the interface. If the cost is not configured with this command, OSPFv3 calculates the value from the reference and interface bandwidths.

For more information, refer to the **auto-cost reference-bandwidth** command.

The **no** form of the command disables the configured cost.

Examples

The following example sets the cost to 620 on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-11)# ipv6 ospf cost 620
```

ipv6 ospf dead-interval

Specifies the time period for which a neighbor router waits for a hello packet from the device before declaring the router down.

Syntax

ipv6 ospf dead-interval *interval*

no ipv6 ospf dead-interval

Command Default

The specified time period is 40 seconds.

Parameters

interval

Dead interval in seconds. Valid values range from 2 through 65535 seconds.

Modes

Interface subtype configuration mode

Usage Guidelines

If you change the dead interval, the hello interval is automatically changed to a value that is one fourth that of the new dead interval, unless the hello interval is also explicitly configured using the **ipv6 ospf hello-interval** command.

The recommended setting is that:

- The dead interval is four times that of the hello interval.
- The hello interval is ¼ times that of the dead interval.
- If the OSPF hello interval and dead interval are set to more aggressive levels than 1:4 seconds respectively, the OSPF protocol might flap when the **write memory** command is used or in the case of any high CPU.

The **running-config** command displays only explicitly configured values of the hello interval, which means that a value that was automatically changed as the result of a dead-interval change is not displayed.

The **no** form of the command restores the default value.

Examples

The following example sets the dead interval to 80 on a specific OSPFv3 virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf dead-interval 80
```

ipv6 ospf hello-interval

Sets the length of time between the transmission of hello packets that an interface sends to neighbor routers.

Syntax

ipv6 ospf hello-interval *interval*

no ipv6 ospf hello-interval

Command Default

The length of time between the transmission of hello packets is set to 10 seconds.

Parameters

interval

Hello interval in seconds. Valid values range from 1 through 65535 seconds. The default is 10.

Modes

Interface subtype configuration mode

Usage Guidelines

If you change the hello interval, the dead interval is automatically changed to a value that is four times that of the new hello interval, unless the dead interval is also explicitly configured using the **ipv6 ospf dead-interval** command.

The recommended setting is that:

- The dead interval is four times that of the hello interval.
- The hello interval is ¼ times that of the dead interval.
- If the OSPF hello interval and dead interval are set to more aggressive levels than 1:4 seconds respectively, the OSPF protocol might flap when the **write memory** command is used or in the case of any high CPU.

The **running-config** command displays only explicitly configured values of the dead interval, which means that a value that was automatically changed as the result of a hello interval change is not displayed.

The **no** form of the command restores the default value.

Examples

The following example sets the hello interval to 20 on a specific OSPFv3 virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface ve 1
device(config-vif-1)# ipv6 ospf hello-interval 20
```

ipv6 ospf hello-jitter

Sets the allowed jitter between HELLO packets.

Syntax

ipv6 ospf hello-jitter *interval*

no ipv6 ospf hello-jitter

Parameters

jitter

Allowed interval between hello packets.Valid values range from 1 through 50 percent (%).

Modes

Interface subtype configuration mode

Usage Guidelines

The hello interval can vary from the configured hello-interval to a maximum of percentage value of configured jitter.

Examples

The following example sets the hello jitter to 20 on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf hello-jitter 20
```

ipv6 ospf instance

Specifies the number of OSPFv3 instances running on an interface.

Syntax

ipv6 ospf instance *instanceID*

no ipv6 ospf instance

Parameters

instanceID

Instance identification number. Valid values range from 0 through 255.

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command restores the default value.

Examples

The following example sets the number of IPv6 OSPF instances to 35 on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf instance 35
```

ipv6 ospf mtu-ignore

Enables or disables maximum transmission unit (MTU) match checking.

Syntax

ipv6 ospf mtu-ignore

no ipv6 ospf mtu-ignore

Command Default

Enabled.

Modes

Interface subtype configuration mode

Usage Guidelines

In default operation, the IP MTU on both sides of an OSPFv3 link must be the same, and a check of the MTU is performed when Hello packets are first exchanged.

The **no** no form of the command disables MTU-match checking on a specific interface.

Examples

The following example disables MTU-match checking on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# no ipv6 ospf mtu-ignore
```

The following example enables MTU-match checking on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf mtu-ignore
```

ipv6 ospf network

Configures network type.

Syntax

ipv6 ospf network { **broadcast** | **point-to-point** }

no ipv6 ospf network

Command Default

Network type is broadcast for Ethernet and VE interfaces. Network type is point-to-point for tunnel and GRE interfaces.

Parameters

broadcast

Network type is broadcast, such as Ethernet.

point-to-point

Network type is point-to-point.

Modes

Interface subtype configuration mode

Usage Guidelines

Point-to-point can support unnumbered links, which requires less processing by OSPFv3.

The **no** form of the command removes the network-type configuration.

NOTE

The network type non-broadcast is not supported at this time.

Examples

The following example configures an OSPFv3 point-to-point link on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf network point-to-point
```

The following example configures an OSPFv3 broadcast link on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf network broadcast
```

ipv6 ospf passive

Sets a specific OSPFv3 interface to passive.

Syntax

ipv6 ospf passive

no ipv6 ospf passive

Modes

Interface subtype configuration mode

Usage Guidelines

The **ipv6 ospf passive** command disables transmission of OSPFv3 control packets on that interface. OSPFv3 control packets received on a passive interface are discarded.

The **no** form of the command sets an interface back to active.

Examples

The following example sets a specific OSPFv3 virtual Ethernet (VE) interface to passive.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf passive
```

ipv6 ospf priority

Configures priority for designated router (DR) election and backup designated routers (BDRs) on the interface you are connected to.

Syntax

ipv6 ospf priority *value*

no ipv6 ospf priority

Command Default

The value is set to 1.

Parameters

value

Priority value. Valid values range from 0 through 255. The default is 1.

Modes

Interface subtype configuration mode

Usage Guidelines

The OSPFv3 router assigned the highest priority becomes the designated router, and the OSPFv3 router with the second-highest priority becomes the backup router.

The **no** form of the command restores the default value.

Examples

The following example sets a priority of 4 for the OSPFv3 router that is connected to an OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf priority 4
```

ipv6 ospf retransmit-interval

Configures the retransmit interval. The retransmit interval is the time between Link-State Advertisement (LSA) retransmissions to adjacent routers for a given interface.

Syntax

ipv6 ospf retransmit-interval *interval*

no ipv6 ospf retransmit-interval

Command Default

The interval is 5 seconds.

Parameters

interval

Retransmit interval in seconds. Valid values range from 0 through 3600 seconds. The default is 5.

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command resets the retransmit interval to its default.

Examples

The following example sets the retransmit interval to 8 for all OSPFv3 devices on an OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf retransmit-interval 8
```

ipv6 ospf suppress-linklsa

Suppresses link LSA advertisements.

Syntax

ipv6 ospf suppress-linklsa

no ipv6 ospf suppress-linklsa

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command restores the defaults where link LSA advertisements are not suppressed.

Examples

The following example suppresses link LSAs from being advertised on devices on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf suppress-linklsa
```

ipv6 ospf transmit-delay

Configures transmit delay for link-update packets. The transmit delay is the estimated time required for OSPFv3 to send link-state update packets on the interface to which you are connected.

Syntax

ipv6 ospf transmit-delay *value*

no ipv6 ospf transmit-delay

Command Default

The transmit delay is set to 1 second.

Parameters

value

Transmit delay in seconds. Valid values range from 0 through 3600 seconds.

Modes

Interface subtype configuration mode

Usage Guidelines

The **no** form of the command restores the default value.

Examples

The following example sets a transmit delay of 25 seconds for devices on a specific OSPFv3 Virtual Ethernet (VE) interface.

```
device# configure terminal
device(config)# interface interface ve 1
device(config-vif-1)# ipv6 ospf transmit-delay 25
```

ipv6 pim border

Configures an interface to be on a PIM Sparse domain border.

Syntax

ipv6 pim border

no ipv6 pim border

Command Default

The interface is not configured as a border device.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command removes the boundary on a PIM-enabled interface.

You must enable PIM globally before you enable it on an interface.

Examples

This example configures Ethernet interface 3/2/4 to be on a PIM Sparse domain border.

```
device(config) interface ethernet 3/2/4
Device(config-if-e10000-3/2/4)# ipv6 pim border
```

ipv6 pim dr-priority

Configures the designated router (DR) priority on IPv6 interfaces.

Syntax

ipv6 pim dr-priority *priority-value*

no ipv6 pim *priority-value*

Command Default

The DR priority value is 1.

Parameters

priority-value

Specifies the DR priority value as an integer. The range is 0 through 65535. The default is 1.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command restores the default DR priority value, 1.

You must enable PIM globally before you enable it on an interface.

If more than one device has the same DR priority on a subnet (as in the case of default DR priority on all), the device with the numerically highest IPv6 address on that subnet is elected as the DR.

The DR priority information is used in the DR election only if all the PIM devices connected to the subnet support the DR priority option. If at least one PIM device on the subnet does not support this option, the DR election falls back to the backwards compatibility mode in which the device with the numerically highest IPv6 address on the subnet is declared the DR regardless of the DR priority values.

Examples

This example configures a DR priority value of 50 on Ethernet interface 3/2/4.

```
device(config) interface ethernet 3/2/4
Device(config-if-e10000-3/2/4)# ipv6 pim dr-priority 50
```

This example configures a DR priority value of 50 on a virtual Ethernet interface.

```
Device(config)# interface ve 10
Device(config-vif-10)# ipv6 pim dr-priority 50
```

ipv6 pim neighbor-filter

Determines which devices can become PIM neighbors.

Syntax

ipv6 pim neighbor-filter*acl-name*

no ipv6 pim*acl-name*|*acl-id*

Command Default

Neighbor filtering is not applied on the interface.

Parameters

acl-name|*acl-id*

The access-control list (ACL) name or ID that specifies the devices you want to permit or deny participation in PIM.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command removes any neighbor filtering applied on the interface.

You must enable PIM globally before you enable it on an interface.

You can configure the **ipv6 pim neighbor-filter** command in either Dense mode (DM) or Sparse mode (SM).

Configure the **ip access-list** command to create an ACL defining the devices you want to permit and deny participation in PIM.

Examples

This example prevents the host from becoming a PIM neighbor on interface Ethernet 1/3/24.

```
device(config)# interface ethernet 1/3/24
device(config-if-e10000-1/3/24)# ipv6 pim neighbor-filter
```

This example configures an ACL named 10 to deny a host and then prevents that host, 1001::1/96, identified in that ACL, from becoming a PIM neighbor on Ethernet interface 1/3/24.

```
device(config)# ip access-list standard 10
device(config-std-ipacl-10)# deny host 1001::1/96
device(config-std-ipacl-10)# permit any
device(config-std-ipacl-10)# exit
device(config)# interface ethernet 1/3/24
device(config-if-e10000-1/3/24)# ipv6 pim neighbor-filter 10
```

History

Release version	Command history
08.0.20a	This command was introduced.

ipv6 pim-sparse

Enables PIM Sparse on an IPv6 interface.

Syntax

ipv6 pim-sparse

no ipv6 pim-sparse

Command Default

PIM Sparse is not enabled on the IPv6 interface.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command removes the PIM sparse configuration from the IPv6 interface.

Examples

This example adds an IPv6 interface to port 1/2/2, then enables PIM Sparse on the interface.

```
Device(config)# interface ethernet 1/2/2
Device(config-if-e10000-1/2/2)# ipv6 address a000:1111::1/64
Device(config-if-e10000-1/2/2)# ipv6 pim-sparse
```

ipv6 pimsm-snooping

Enables PIM6 SM traffic snooping.

Syntax

ipv6 pimsm-snooping

no ipv6 pimsm-snooping

Command Default

PIM6 SM traffic snooping is disabled.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

The device must be in multicast listening discovery (MLD) passive mode before it can be configured for PIM6 SM snooping.

Use PIM6 SM snooping only in topologies where multiple PIM sparse routers connect through a device. PIM6 SM snooping does not work on a PIM dense mode router which does not send join messages and traffic to PIM dense ports is stopped. A PIM6 SM snooping-enabled device displays a warning if it receives PIM dense join or prune messages.

When PIM6 SM snooping is enabled globally, you can override the global setting and disable it for a specific VLAN.

The **no** form of this command disables PIM6 SM traffic snooping.

Examples

The following example enables PIM6 SM traffic snooping.

```
device(config)# ipv6 multicast passive
device(config)# ipv6 pimsm-snooping
```

The following example disables PIM6 SM traffic snooping.

```
device(config)# no ipv6 pimsm-snooping
```

The following example enables PIM6 SM traffic snooping on VLAN 20.

```
device(config)# vlan 20
device(config-vlan-20)# untagged ethernet 1/1/5 ethernet 1/1/7 ethernet 1/1/11
device(config-vlan-20)# multicast6 passive
device(config-vlan-20)# multicast6 pimsm-snooping
```

ipv6 policy route-map

Enables IPv6 policy-based routing (PBR).

Syntax

ipv6 policy route-map *route-map-name*

no ipv6 policy route-map *route-map-name*

Command Default

PBR is not enabled.

Parameters

route-map-name

Specifies the name of the route map.

Modes

Global configuration mode

Interface configuration mode

Virtual interface configuration mode

Usage Guidelines

This command can be used to enable IPv6 PBR globally on all interfaces or on a specific interface.

The **no** form of the command disables IPv6 PBR.

Examples

The following example configures a route-map named test-route and enables IPv6 PBR globally.

```
device# configure terminal
device(config)# ipv6 access-list acl8 permit 2001:DB8:12d:1300::/64
device(config)# route-map test-route permit acl8
device(config-routemap test-route)# match ipv6 address acl8
device(config-routemap test-route)# set ipv6 next-hop 2001:DB8:12d:1300:1
device(config-routemap test-route)# exit
device(config)# ipv6 policy route-map test-route
```

The following example configures a route-map named test-route and enables IPv6 PBR on Ethernet interface 1/1/1.

```
device# configure terminal
device(config)# ipv6 access-list acl8 permit 2001:DB8:12d:1300::/64
device(config)# route-map test-route permit acl8
device(config-routemap test-route)# match ipv6 address acl8
device(config-routemap test-route)# set ipv6 next-hop 2001:DB8:12d:1300:1
device(config-routemap test-route)# exit
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ipv6 policy route-map map1
```

History

Release version	Command history
08.0.70	This command was introduced.

ipv6 prefix-list

Configures IPv6 prefix lists for use in basic traffic filtering.

Syntax

ipv6 prefix-list { *name* | *sequence-number* } **deny** *ipv6-prefix/prefix-length* [**ge** *ge-value*] [**le** *le-value*]

ipv6 prefix-list { *name* | *sequence-number* } **description** *string*

ipv6 prefix-list { *name* | *sequence-number* } **permit** *ipv6-prefix/prefix-length* [**ge** *ge-value*] [**le** *le-value*]

ipv6 prefix-list { *name* | *sequence-number* } **seq** *sequence-number* **permit** *ipv6-prefix/prefix-length* [**ge** *ge-value*] [**le** *le-value*]

ipv6 prefix-list { *name* | *sequence-number* } **seq** *sequence-number* **deny** *ipv6-prefix/prefix-length* [**ge** *ge-value*] [**le** *le-value*]

no ipv6 prefix-list *name*

Command Default

A prefix-list is not created.

Parameters

name
Specifies the prefix list name.

sequence-number
Specifies an IPv6 prefix list sequence number.

deny *ip-prefix/prefix-length*
Denies a packet that contains a route specified in the prefix list. The prefix list matches only on the specified prefix/prefix length, unless you use the **ge** *ge-value* or **le** *le-value* parameters.

ge *ge-value*
Specifies a minimum range of prefix lengths, from *ge-value* to 128.

le *le-value*
Specifies a maximum range of prefix lengths, up to 128, from the *le-value* to the *prefix-length* parameter.

description *string*
Specifies a text string describing the prefix list.

permit *ip-prefix/prefix-length*
Permits a packet that contains a route specified in the prefix list. The prefix list matches only on the specified prefix/prefix length, unless you use the **ge** *ge-value* or **le** *le-value* parameters.

seq *sequence-number*
Specifies an IPv6 prefix list sequence number. If you do not specify a sequence number, the software numbers them in increments of 5, beginning with prefix list entry 5. The device interprets the prefix list entries in numerical order, beginning with the lowest sequence number.

Modes

Global configuration mode

Usage Guidelines

An IPv6 prefix list is composed of one or more conditional statements that execute a permit or deny action if a packet matches a specified prefix. In prefix lists with multiple statements, you can specify a sequence number for each statement. The specified sequence number determines the order in which the statement appears in the prefix.

You can configure an IPv6 prefix list on a global basis, then use it as input to other commands or processes, such as route aggregation, route redistribution, route distribution, route maps, and so on. When a device interface sends or receives an IPv6 packet, it applies the statements within the IPv6 prefix list in their order of appearance to the packet. As soon as a match occurs, the device takes the specified action (permit or deny the packet) and stops further comparison for that packet.

You can use permit statements in the prefix list to specify the traffic that you want to send to the other feature. If you use deny statements, the traffic specified by the deny statements is not supplied to the other feature. You can configure up to one hundred IPv6 prefix lists.

You must specify the ipv6-prefix parameter in hexadecimal using 16-bit values between colons as documented in RFC 4291. You must specify the prefix-length parameter as a decimal value. A slash mark (/) must follow the ipv6-prefix parameter and precede the prefix-length parameter.

The *ge-value* or *le-value* you specify must meet the following condition for *prefix-length*:

```
ge-value <= le-value <= 128
```

If you do not specify **ge** *ge-value* or **le** *le-value*, the prefix list matches only on the exact prefix you specify with the *ipv6-prefix/prefix-length* parameter.

Prefix lists can be applied to RIPng globally using the separate **prefix-list** command) or at the interface level using the separate **ipv6 rip prefix-list** command. If both global IPv6 RIP prefix list and interface IPv6 rip prefix list are enabled, routes are filtered based on the interface prefix list.

The **no** form of the command deletes a prefix list.

Examples

The following example creates a prefix-list that allows routes with the prefix 2001:db8::/32 to be included in RIPng routing updates sent from Ethernet interface 3/1/1.

```
device# configure terminal
device(config)# ipv6 prefix-list routesfor2001 permit 2001:db8::/32
device(config) # interface ethernet 3/1/1
device(config-if-e1000-3/1/1)# ipv6 rip prefix-list routesfor2001 out
```

The following example creates a prefix-list that allows routes with the prefix 2001:db8::/32 to be included in RIPng routing updates sent from all the IPv6 RIP interfaces on the device.

```
device# configure terminal
device(config)# ipv6 prefix-list routesfor2001 permit 2001:db8::/32
device(config)# ipv6 router rip
device(config-ripng-router)# distribute-list prefix-list routesfor2001 out
```

ipv6 raguard policy

Configures the specified Router Advertisement (RA) guard policy and enters RA guard policy configuration mode.

Syntax

ipv6 raguard policy *name*

no ipv6 raguard policy *name*

Parameters

name

An ASCII string indicating the name of the RA guard policy to configure.

Modes

Global configuration mode

RA guard policy configuration mode

Usage Guidelines

You can configure up to 256 RA guard policies.

The **no** form of this command deletes the specified RA guard policy.

Examples

The following example configures an RA guard policy and enters RA guard policy configuration mode:

```
device(config)# ipv6 raguard policy policy1
device(ipv6-RAG-policy policy1)#
```

ipv6 raguard vlan

Associates a Router Advertisement (RA) guard policy with a VLAN.

Syntax

ipv6 raguard vlan *vlan-number* **policy** *name*

no ipv6 raguard vlan *vlan-number* **policy** *name*

Parameters

vlan-number

Configures the ID number of the VLAN to which the specified RA guard policy should be associated. Valid range is from 1 to 4095.

policy

Associates a RA guard policy to the VLAN.

name

Specifies the name of the RA guard policy to be associated with the VLAN.

Modes

Global configuration mode

Usage Guidelines

A VLAN can have only one association with a RA guard policy. If you try to associate a new RA guard policy with a VLAN that is already associated with a policy, the new RA guard policy replaces the old one.

The **no** form of the command deletes the association of a RA guard policy from the VLAN.

Examples

The following example associates RA guard policy named p1 with VLAN 1:

```
device(config)# ipv6 raguard vlan 1 policy p1
```

ipv6 raguard whitelist

Configures the Router Advertisement (RA) guard whitelist and adds the IPv6 address as the allowed source IP address.

Syntax

ipv6 raguard whitelist *whitelist-number* **permit** *ipv6-address*

no ipv6 raguard whitelist *whitelist-number* **permit** *ipv6-address*

Parameters

whitelist-number
Configures the unique identifier for the RA guard whitelist. Valid values are 0 to 255.

permit
Configures the specified IPv6 address as the allowed source IP address to the RA guard whitelist.

ipv6-address
Configures the source IPv6 address. The address should be in the format X:X::X:X or X:X::X:X/M.

Modes

Global configuration mode

Usage Guidelines

You can configure source IP addresses from which RAs are permitted.

You can configure up to 64 RA guard whitelists, and each whitelist can have a maximum of 128 entries.

To remove the RA guard whitelist, use the **no** form the command without the **permit** keyword.

To remove a particular IPv6 address from the whitelist, use the **no** form of the command with the **permit***ipv6-address* keyword-variable pair.

When a whitelist associated with an RA guard policy is removed, all the entries in the whitelist are also removed. All the RAs are dropped because there is no whitelist associated with the RA guard policy.

Examples

The following example configures an RA guard whitelist with the allowed source IP address:

```
device(config)# ipv6 raguard whitelist 1 permit fe80:db8::db8:10
```

The following example removes an RA guard whitelist:

```
device(config)# no ipv6 raguard whitelist 1
```

The following example removes a particular IPv6 address from the RA guard whitelist:

```
device(config)# no ipv6 raguard whitelist 1 permit fe80:db8::db8:10
```

ipv6 redirects

Enables a Layer 3 switch to send an IPv6 ICMP redirect message to a neighboring host to inform it of a better first-hop router on a path to a destination.

Syntax

ipv6 redirects

no ipv6 redirects

Command Default

By default, the sending of IPv6 ICMP redirect messages by a Layer 3 switch is disabled.

Modes

Interface configuration mode

Usage Guidelines

This feature is supported on Virtual Ethernet (VE) interfaces only.

The **no** form of the command disables a Layer 3 switch to send an IPv6 ICMP redirect message to a neighboring host.

Examples

The following example enables a Layer 3 switch to send an IPv6 ICMP redirect message to a neighboring host.

```
device(config)# interface ve 1
device(config-vif-1)# ipv6 redirects
```

ipv6 rip default-information

Configures learning and advertising of default routes for RIPng.

Syntax

ipv6 rip default-information { **only** | **originate** }

no ipv6 rip default-information { **only** | **originate** }

Command Default

By default, the device does not learn IPv6 default routes.

Parameters

only

Originates the default routes and suppresses all other routes from RIPng route updates.

originate

Originates the default routes and includes all other routes in the RIPng route updates.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of the command to remove the explicit default routes from RIPng and to suppress advertisement of these routes.

Examples

The following example originates IPv6 default routes and includes all other routes in RIPng route updates sent from Ethernet interface 3/1/1.

```
device# configure terminal
device(config)# interface ethernet 3/1/1
device(config-if-e10000-3/1/1)# ipv6 rip default-information originate
```

ipv6 rip enable

Enables RIPng on an interface.

Syntax

ipv6 rip enable

no ipv6 rip enable

Command Default

RIPng is disabled by default.

Modes

RIPng configuration mode

Usage Guidelines

Use the **no** form of the command to disable RIPng on an individual interface.

Before you can enable RIPng, you must first enable forwarding of IPv6 traffic on the device using the **ipv6 unicast-routing** command. You must also enable IPv6 on each interface that will support RIPng. Enable IPv6 explicitly on an interface with the **ipv6 enable** command or by configuring an IPv6 address on the interface.

After you enable RIPng on the device using the **ipv6 router rip** command, use the **ipv6 rip enable** command to enable each RIPng interface individually. You can use the command to enable RIPng on a physical or virtual routing interface.

Examples

The following example enables RIPng on Ethernet interface 3/1/1.

```
device# configure terminal
device(config)# interface ethernet 3/1/1
device(config-if-e100-3/1/1)# ipv6 rip enable
```

The following example enables RIPng on virtual ethernet interface 3.

```
device# configure terminal
device(config)# interface ve 3
device(config-vif-3)# ipv6 rip enable
```

ipv6 rip metric-offset

Changes the metric for RIPng routes learned and advertised on an interface.

Syntax

ipv6 rip metric-offset *value*

ipv6 rip metric-offset out *value*

no ipv6 rip metric-offset *value*

no ipv6 rip metric-offset out *value*

Command Default

By default, an IPv6 RIP interface adds 1 to the metric of an incoming RIPng route that it learns. By default, the interface advertises RIPng routes without adding to the metric (that is, with a default offset of zero).

Parameters

out

Specifies that the metric offset applies to outgoing (advertised) RIPng routes.

value

A decimal value that represents the offset to be added. The range is 1 through 16 for incoming routes and 0 through 15 for outgoing routes.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of these commands to return the metric offset to its default value, that is, 1 for incoming (learned) routes and 0 for outgoing (advertised) routes.

Examples

The following example increases the metric on learned RIPng routes by 2. The same interface increases the metric offset by 3 when it advertises a RIPng route.

```
device# configure terminal
device(config)# interface ethernet 3/1/1
device(config-if-e1000-3/1/1)# ipv6 rip metric-offset 2
device(config-if-e1000-3/1/1)# ipv6 rip metric-offset out 3
```

ipv6 rip summary-address

Advertises a summary of IPv6 addresses from an interface and specifies an IPv6 prefix that summarizes the routes.

Syntax

ipv6 rip summary-address {*ipv6-prefix* / *prefix-length* }

no ipv6 rip summary-address{*ipv6-prefix* / *prefix-length* }

Command Default

By default, original full-length routes rather than summary routes are advertised.

Parameters

ipv6-prefix

Specifies the summarized IPv6 prefix as a hexadecimal value broken into 16-bit values separated by colons per RFC 2373.

prefix-length

Specifies the IPv6 prefix length in bits as a decimal value.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of the command to stop advertising the summarized IPv6 prefix.

The IPv6 prefix value must be separated from the prefix length by a forward slash (/).

Examples

The following example advertises the summarized prefix 2001:db8::/36 instead of the IPv6 address 2001:db8:0:adff:8935:e838:78:e0ff/64 from Ethernet interface 3/1/1.

```
device# configure terminal
device(config)# interface ethernet 3/1/1
device(config-if-e40000-3/1/1)# ipv6 address 2001:db8:0:adff:8935:e838:78:
e0ff /64
device(config-if-e40000-3/1/1)# ipv6 rip summary-address 2001:db8::/36
```

ipv6 route

Adds a static route to the IPv6 routing tables.

Syntax

ipv6 route[**vrf***vrf-name*]*dest-ipv6-prefix*[**ethernet***unit/slot/port*|**lag***lag-id*|**ve***ve-num*][**next-hop-vrf***vrf-name*|**default-vrf**]*next-hop-ipv6-address*[*metric*][**bfd**][**distance***number*]

ipv6 route[**vrf***vrf-name*]*dest-ipv6-prefix*{**tunnel***num*|**null0**}[*metric*][**distance***number*]

no ipv6 route[**vrf***vrf-name*]*dest-ipv6-prefix*[**ethernet***unit/slot/port*|**lag***lag-id*|**ve***ve-num*][**next-hop-vrf***vrf-name*|**default-vrf**]*next-hop-ipv6-address*[*metric*][**bfd**][**distance***number*]

no ipv6 route[**vrf***vrf-name*]*dest-ipv6-prefix*{**tunnel***num*|**null0**}[*metric*][**distance***number*]

Parameters

vrf*vrf-name*
: Specifies the VRF that contains the next-hop router (gateway) for the route.

dest-ipv6-prefix
: Specifies the destination IPv6 address, including prefix length.

ethernet*unit/slot/port*
: Configures the outgoing interface as the specified Ethernet interface.

lag*lag-id*
: Specifies a LAG interface

ve*ve-num*
: Configures the outgoing interface as the specified Virtual Ethernet interface.

next-hop-vrf*vrf-name*
: Specifies the next-hop VRF.

default-vrf
: Specifies the next-hop default VRF.

next-hop-ipv6-address
: Specifies the IPv6 address of a next-hop gateway. The next-hop address may be a global IPv6 address or a link-local IPv6 address.

metric
: Specifies the cost metric of the route. Valid values range from 1 through 16. The default is 1.

bfd
: Enables Bidirectional Forwarding Detection (BFD) for the IP static route.

distance*number*
: Specifies the administrative distance of the route. The default value is 1.

tunnel*num*
: Configures the outgoing interface as the specified tunnel interface.

null0
: Drops packets with this destination.

Modes

Global configuration mode

Usage Guidelines

By default, static routes take precedence over routes learned by routing protocols.

Before configuring a static IPv6 route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

If a non-default VRF is configured, the **no** form of the command removes the static IPv6 route configuration from a VRF. When no VRF is configured, the **no** form of the command removes the IPv6 static route.

When a tunnel is configured as the next hop for a static route, the tunnel must already be configured if the destination is a non-default VRF. In contrast, a tunnel can be designated as the next hop in the default VRF before it is configured. The default VRF is used when no VRF is specified in the command.

Examples

The following example configures inter-VRF route leaking between two VRFs.

```
device(config)# ipv6 route vrf blue 2000:44:1:1::/64 next-hop-vrf red 2000:131:1:1::3
```

The following example configures inter-VRF route leaking by specifying the next-hop VRF.

```
device(config)# ipv6 route 32::32/128 next-hop-vrf red 2002::2
```

The following example configures inter-VRF route leaking by specifying the outgoing interface of another VRF.

```
device(config)# ipv6 route 32::32/128 ve 100
Info: Outgoing interface vrf red is different from route vrf default-vrf
```

The following example configures a static IPv6 route for a destination network with the prefix 2001:DB8::0/32 and a next-hop gateway with the global address 2001:DB8:0:ee44::1.

```
device(config)# ipv6 route 2001:DB8::0/32 2001:DB8:0:ee44::1
```

The following example configures a static IPv6 route for a destination network with the prefix 2001:DB8::0/32 and a next-hop gateway with the global address 2001:DB8:0:ee44::1 in the non-default VRF named blue.

```
device(config)# ipv6 route vrf blue 2001:DB8::0/32 2001:DB8:0:ee44::1
```

The following example configures tunnel 1 as the next-hop gateway for 2001:DB8::0/32 destination addresses. Because the destination is a non-default VRF (VRF blue), the tunnel must be configured before the static route is configured.

```
device(config)# ipv6 route vrf blue 2001:DB8::0/32 tunnel 1
```

The following example configures a null route that discards packets to the destination IPv6 route 2001 : DB8 : : 0/32 when the preferred route using virtual interface 3 (ve 3) through the next hop with the link-local address fe80::1 is not available. The null route has a higher metric (2) than the preferred route, which has a default metric of 1.

```
device# configure terminal
device(config)# ipv6 route 2001 : DB8 : : 0/32 ve 3 fe80::1
device(config)# ipv6 route 2001 : DB8 : : 0/32 null0 2
```

The following example configures BFD for an IPv6 static route.

```
device# configure terminal
device(config)# ipv6 route 2001:1::3:1/64 2001:2::3:1 bfd
```

History

Release version	Command history
08.0.95	This command was modified to add the **next-hop-vrf***vrf-name* and **default-vrf** options.

ipv6 route next-hop

Enables a device to use routes from a specified protocol to resolve a configured static route.

Syntax

ipv6 route[**vrf***vrf-name*]**next-hop**{**bgp**|**ospf**|**rip**}

no ipv6 route[**vrf***vrf-name*]**next-hop**{**bgp**|**ospf**|**rip**}

Command Default

By default, static routes are not distributed or resolved through another protocol.

Parameters

vrf*vrf-name*

Specifies the VRF that contains the next-hop router (gateway) for the route.

bgp

Configures the device to use iBGP and eBGP routes to resolve static routes.

ospf

Configures the device to use OSPF routes to resolve static routes.

rip

Configures the device to use RIP routes to resolve static routes.

Modes

Global configuration mode

Usage Guidelines

Before configuring a static IPv6 route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

The **no** form of the command disables IPv6 static route next-hop resolution through the designated protocol. If a VRF is configured, the **no** form of the command removes the static IPv6 route configuration from the VRF.

Examples

The following example enables IPv6 static route next-hop resolution through OSPF.

```
device# configure terminal
device(config)# ipv6 route next-hop ospf
```

ipv6 route next-hop-enable-default

You can enable the IPv6 default static route to resolve other static routes.

Syntax

ipv6 route[**vrf***vrf-name*] **next-hop-enable-default**

no ipv6 route[**vrf***vrf-name*] **next-hop-enable-default**

Command Default

By default, the IPv6 default static route is not used to resolve static route next hops.

Parameters

vrf*vrf-name*

Specifies the VRF that contains the next-hop router (gateway) for the route.

Modes

Global configuration mode

Usage Guidelines

Before configuring a static IPv6 route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and must enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

The **no** form of the command disables IPv6 static route next-hop resolution through the default route. If a VRF is configured, the **no** form of the command removes the static IPv6 route configuration from the VRF.

Examples

The following example configures static routing next-hop recursion to three levels (the default). It configures the network default static route to global IPv6 address 2001:DB8:0:ee44::1 and allows it to resolve other static routes.

NOTE

You can specify a level of recursion up to 10.

```
device# configure terminal
device(config)# ipv6 route next-hop-recursion
device(config)# ipv6 route ipv6 route ::/0 2001:DB8:0:ee44::1
device(config)# ipv6 route next-hop-enable-default
```

ipv6 route next-hop-recursion

You can resolve static route destination using recursive lookup in local address tables up to 10 hops away.

Syntax

ipv6 route[**vrf***vrf-name*]**next-hop-recursion**[*number*]

no ipv6 route[**vrf***vrf-name*]**next-hop-recursion**[*number*]

Command Default

By default, only the local IPv6 address table is consulted to resolve the next hop toward a static route destination.

Parameters

vrf*vrf-name*

Specifies the VRF that contains the next-hop router (gateway) for the route.

number

Specifies the level of recursion for address lookup. The range is 1 through 10. If no number is specified, the default value is 3.

Modes

Global configuration mode

Usage Guidelines

Before configuring a static IPv6 route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and must enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

The **no** form of the command disables IPv6 static route next-hop recursion. If a VRF is configured, the **no** form of the command removes the static IPv6 route configuration from the VRF.

Examples

The following example configures recursive static route lookup to five levels for static route resolution.

```
device# configure terminal
device(config)# ipv6 route next-hop-recursion 5
```

ipv6 router ospf

Enables and configures the Open Shortest Path First version 3 (OSPFv3) routing protocol.

Syntax

ipv6 router ospf [**vrf** *name*]

no ipv6 router ospf

Command Default

Disabled.

Parameters

vrf *name*

Specifies a nondefault VRF.

Modes

Global configuration mode

Usage Guidelines

If you save the configuration to the startup-config file after disabling OSPFv3, all OSPFv3 configuration information is removed from the startup-config file.

Use this command to enable the OSPFv3 routing protocol and enter OSPFv3 router or OSPFv3 router VRFconfiguration mode. OSPFv3 maintains multiple instances of the routing protocol to exchange route information among various VRF instances.

The **no** form of the command deletes all current OSPFv3 configurations and blocks any further OSPFv3 configuration.

Examples

The following example enables OSPFv3 on a default VRF and enters OSPFv3 router configuration mode.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)#
```

ipv6 router pim

Enables IPv6 PIM Sparse mode for IPv6 Protocol Independent Multicast (PIMv6) routing globally or on a specified VRF.

Syntax

ipv6 router pim [**vrf** *vrf-name*]

no ipv6 router pim [**vrf** *vrf-name*]

Command Default

IPv6 PIM Sparse mode is not enabled.

Parameters

vrf *vrf-name*

Specifies a non-default virtual routing and forwarding (VRF) instance.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the IPv6 PIM Sparse mode configuration.

Examples

The following example enables IPv6 PIM Sparse mode.

```
device# configure terminal
device(config)# ipv6 router pim
```

The following example enables IPv6 PIM Sparse mode for a non-default VRF instance.

```
device# configure terminal
device(config)# ipv6 router pim vrf blue
```

ipv6 router rip

Enables RIPng globally (on the device).

Syntax

ipv6 router rip

no ipv6 router rip

Command Default

By default, RIPng is disabled.

Modes

Global configuration mode

Usage Guidelines

To disable RIPng globally, use the **no** form of this command.

Before you can enable RIPng, you must enable forwarding of IPv6 traffic on the device using the **ipv6 unicast-routing** command.

You must enable IPv6 on each interface on which RIPng is to be enabled. Enable IPv6 explicitly on the interface with the **ipv6 enable** command or by configuring an IPv6 address on the interface.

After enabling RIPng globally, you must enable it on individual device interfaces using the **ipv6 rip enable** command. You can enable RIPng on physical as well as virtual routing interfaces.

Examples

The following example enables RIPng on the device.

```
device# configure terminal
device(config)# ipv6 router rip
device(config-ripng-router)#
```

ipv6 router vrrp

Globally enables IPv6 Virtual Router Redundancy Protocol (VRRP).

Syntax

ipv6 router vrrp

no ipv6 router vrrp

Command Default

IPv6 VRRP is not globally enabled.

Modes

Global configuration mode

Usage Guidelines

After globally enabling IPv6 VRRP, the command prompt does not change. Nearly all subsequent IPv6 VRRP configuration is performed at the interface level, but IPv6 VRRP must be enabled globally before configuring IPv6 VRRP instances.

The **no** form of the command disables VRRP globally.

Examples

The following example enables IPv6 VRRP globally and enters interface configuration mode to allow you to enter more VRRP configuration.

```
device# configure terminal
device(config)# ipv6 router vrrp
device(config-ipv6-vrrp-router)# interface ethernet 1/1/4
device(config-if-e1000-1/1/4)# ipv6 address fd3b::3/64
device(config-if-e1000-1/1/4)# ipv6 vrrp vrid 2
device(config-if-e1000-1/1/4-vrid-2)# backup priority 100
device(config-if-e1000-1/1/4-vrid-2)# version 3
device(config-if-e1000-1/1/4-vrid-2)# advertise backup
device(config-if-e1000-1/1/4-vrid-2)# ipv6-address fe80::768e:f8ff:fe2a:0099
device(config-if-e1000-1/1/4-vrid-2)# ipv6-address fd3b::2
device(config-if-e1000-1/1/4-vrid-2)# activate
```

ipv6 router vrrp-extended

Globally enables IPv6 Virtual Router Redundancy Protocol Extended (VRRP-E).

Syntax

ipv6 router vrrp-extended

no ipv6 router vrrp-extended

Command Default

VRRP-E is not globally enabled.

Modes

Global configuration mode

Usage Guidelines

After globally enabling IPv6 VRRP-E, nearly all subsequent IPv6 VRRP-E configuration is performed at the interface level. If IPv6 VRRP-E is not globally enabled, you will see an error message when configuring IPv6 VRRP-E instances.

The **no** form of the command disables VRRP-E globally.

Examples

The following example enables IPv6 VRRP-E globally and enters interface configuration mode for subsequent IPv6 VRRP-E configuration.

```
device# configure terminal
device(config)# ipv6 router vrrp-extended
device(config-ipv6-vrrpe-router)# interface ethernet 1/1/5
```

ipv6 tcp adjust-mss

Configures the TCP maximum segment size (MSS) adjustment value on the IPv6 interface.

Syntax

ipv6 tcp adjust-mss *tcp-mss-value*

no ipv6 tcp adjust-mss *tcp-mss-value*

Command Default

The threshold value is not configured.

Parameters

tcp-mss-value

Configures the TCP MSS adjustment value for SYN SYN-ACK packets. Valid values range from 40 through 1440.

Modes

Interface configuration mode

Usage Guidelines

For tunnel interfaces, the command range differs depending on the tunnel mode.

The command range is different if jumbo is enabled on the device.

Examples

The following example configures the TCP MSS adjustment value on the interface

```
device(config)# interface ethernet 1/1/1
device (config-if-e1000-1/1/1)#ipv6 tcp adjust-mss 800
```

History

Release version	Command history
08.0.90	This command was introduced.

ipv6 unicast-routing

Enables the forwarding of IPv6 traffic on a Layer 3 swtich.

Syntax

ipv6 unicast-routing

no ipv6 unicast-routing

Command Default

The forwarding of IPv6 traffic is not enabled.

Modes

Global configuration mode

Usage Guidelines

Before configuring a static IPv6 route, you must enable the forwarding of IPv6 traffic on the Layer 3 switch using the **ipv6 unicast-routing** command and must enable IPv6 on at least one interface by configuring an IPv6 address or explicitly enabling IPv6 on that interface.

The **no** form of the command disables IPv6 unicast routing.

Examples

The following example enables IPv6 unicast routing.

```
device(config)# ipv6 unicast-routing
```

ipv6 vrrp vrid

Configures an IPv6 Virtual Router Redundancy Protocol (VRRP) virtual router identifier (VRID).

Syntax

ipv6 vrrp vrid *vrid*

no ipv6 vrrp vrid *vrid*

Command Default

An IPv6 VRRP VRID does not exist.

Parameters

vrid

Configures a number for the IPv6 VRRP VRID. The range is from 1 through 255.

Modes

Interface configuration mode

Usage Guidelines

Before configuring this command, ensure that IPv6 VRRP is enabled globally; otherwise, an error stating “Invalid input...” is displayed as you try to create a VRRP instance.

The **no** form of this command removes the IPv6 VRRP VRID from the configuration.

Examples

The following example configures IPv6 VRRP VRID 1.

```
device# configure terminal
device(config)# ipv6 router vrrp
device(config)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ipv6 address fd2b::2/64
device(config-if-e1000-1/1/5)# ipv6 vrrp vrid 2
device(config-if-e1000-1/1/5-vrid-2)# owner
device(config-if-e1000-1/1/5-vrid-2)# ipv6-address fe80::768e:f8ff:fe2a:0099
device(config-if-e1000-1/1/5-vrid-2)# ipv6-address fd2b::2
device(config-if-e1000-1/1/5-vrid-2)# activate
```

ipv6 vrrp-extended vrid

Configures an IPv6 Virtual Router Redundancy Protocol Extended (VRRP-E) virtual router identifier (VRID).

Syntax

ipv6 vrrp-extended vrid *vrid*

no ipv6 vrrp-extended vrid *vrid*

Command Default

An IPv6 VRRP-E VRID does not exist.

Parameters

vrid

Configures a number for the IPv6 VRRP-E VRID. The range is from 1 through 255.

Modes

Interface configuration mode

Usage Guidelines

Before configuring this command, ensure that IPv6 VRRP-E is enabled globally; otherwise, an error stating “Invalid input...” is displayed as you try to create a VRRP-E instance.

The **no** form of this command removes the IPv6 VRRP-E VRID from the configuration.

Examples

The following example configures IPv6 VRRP-E VRID 2.

```
device# configure terminal
device(config)# ipv6 router vrrp-extended
device(config-ipv6-vrrpe-router)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ipv6 address fd4b::2/64
device(config-if-e1000-1/1/5)# ipv6 vrrp-extended vrid 2
device(config-if-e1000-1/1/5-vrid-2)# backup  priority 50 track-priority 10
device(config-if-e1000-1/1/5-vrid-2)# ipv6-address fe80::768e:f8ff:fe3a:0099
device(config-if-e1000-1/1/5-vrid-2)# ipv6-address fd4b::99
device(config-if-e1000-1/1/5-vrid-2)# activate
```

ipv6-address

Configures a virtual IPv6 address for a Virtual Router Redundancy Protocol version 3 (VRRPv3) or VRRP Extended version 3 (VRRP-Ev3) instance.

Syntax

ipv6-address { *ipv6-address* | **auto-gen-link-local** }

no ipv6-address { *ipv6-address* | **auto-gen-link-local** }

Command Default

A virtual IPv6 address is not configured for a VRRPv3 or VRRP-Ev3 instance.

Parameters

ipv6-address
: Configures an IPv6 address.

auto-gen-link-local
: Automatically generates a virtual IPv6 link-local address for the VRRPv3 instance. Not supported in VRRP-Ev3.

Modes

Virtual routing ID interface configuration mode

Usage Guidelines

For VRRP instances, the IPv6 address used for the virtual router must be configured on the device assigned to be the initial VRRP owner device. The same physical IPv6 address cannot be used on any other VRRP device.

If the **auto-gen-link-local** keyword is entered, a virtual IPv6 link-local address is generated automatically for the specific VRRPv3 instance. The virtual link-local address is carried in VRRPv3 advertisements. A manually configured link-local address takes precedence over the automatically generated address.

NOTE
Automatically generated virtual link-local addresses are not supported for VRRP-Ev3 instances.

The **no** form of the command removes the virtual router IPv6 address. If the **auto-gen-link-local** keyword was active, the automatically generated virtual IPv6 link-local address is removed for the VRRPv3 instance, and subsequent VRRPv3 advertisements will not carry this link-local address.

Examples

The following example configures a virtual IPv6 address for VRID 1 when IPv6 VRRPv3 is implemented. In this example, the device is configured as the VRRPv3 owner device.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ipv6 address fd2b::1/64
device(config-if-e1000-1/1/6)# ipv6 vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner
device(config-if-e1000-1/1/6-vrid-1)# ipv6-address fe80::768e:f8ff:fe2a:0099
device(config-if-e1000-1/1/6-vrid-1)# ipv6-address fd2b::1
device(config-if-e1000-1/1/6-vrid-1)# activate
```

The following example configures a virtual IPv6 address for VRID 2 when VRRP-Ev3 is implemented. In this example, the device is configured as a VRRP-Ev3 backup device and the highest priority device will become the master VRRP-Ev3 device.

```
device# configure terminal
device(config)# ipv6 router vrrp-extended
device(config-ipv6-vrrpe-router)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ipv6 address fd4b::1/64
device(config-if-e1000-1/1/5)# ipv6 vrrp-extended vrid 2
device(config-if-e1000-1/1/5-vrid-2)# backup priority 110
device(config-if-e1000-1/1/5-vrid-2)# ipv6-address fe80::768e:f8ff:fe3a:0099
device(config-if-e1000-1/1/5-vrid-2)# ipv6-address fd4b::99
device(config-if-e1000-1/1/5-vrid-2)# activate
```

ipv6-address auto-gen-link-local

Generates a virtual link-local IPv6 address and assigns it as the virtual IPv6 address for a VRRPv3 instance.

Syntax

ipv6-address auto-gen-link-local

no ipv6-address auto-gen-link-local

Modes

VRRP sub-configuration mode

Usage Guidelines

The **no** form of this command deletes the auto-generated virtual link-local IPv6 address for the VRRP v3 instance.

The default VRRPv3 implementation allows only the link-local address that is configured on a physical interface to be used as the virtual IPv6 address of a VRRPv3 instance. This limits configuring a link-local address for each VRRP instance on the same physical interface because there can be only one link-local address per physical interface. You can use this command on the owner or backup router to generate a virtual link-local IPv6 address from the virtual MAC address of a VRRPv3 instance and assign it as the virtual IPv6 address for the VRRPv3 instance. This auto-generated link-local IPv6 address is not linked to any physical interface on the router.

Examples

The following example generates a virtual link-local IPv6 address and its allocation as the virtual IPv6 address of a VRRPv3 cluster on an owner router.

```
device(config)# interface ve 3
device(config-vif-3)# ipv6 vrrp vrid 2
device(config-vif-3-vrid-2)# owner
device(config-vif-3-vrid-2)# ipv6-address auto-gen-link-local
device(config-vif-3-vrid-2)# activate
```

History

Release version	Command history
08.0.01	This command was introduced.

ipv6-neighbor inspection trust

Enables trust mode for specific ports.

Syntax

ipv6-neighbor inspection trust [**vrf** *vrf-name*]

no ipv6-neighbor inspection trust [**vrf** *vrf-name*]

Command Default

Trust mode is not enabled. When you enable ND inspection on a VLAN, by default, all the interfaces and member ports are considered as untrusted.

Parameters

vrf
: Specifies the VRF instance.

vrf-name
: Specifies the ID of the VRF instance.

Modes

Interface configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of the command disables trust mode on ports.

Examples

The following example displays the trust mode configuration for ports.

```
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# ipv6-neighbor inspection trust
```

The following example displays the trust mode configuration on a port on VRF 3.

```
device(config-if-e1000-1/1/1)# ipv6-neighbor inspection trust vrf 3
```

History

Release version	Command history
08.0.20	This command was introduced.

ipv6-proto

Configures an IPv6 protocol-based VLAN.

Syntax

ipv6-proto [**name** *string*]

no ipv6-proto [**name** *string*]

Command Default

An IPv6 protocol-based VLAN is not configured.

Parameters

name *string*

Specifies the IPv6 protocol-based VLAN name. The maximum length of the string is 32 characters.

Modes

VLAN configuration mode

Usage Guidelines

You can configure a protocol-based VLAN as a broadcast domain for IPv6 traffic. When the Layer 3 switch receives an IPv6 multicast packet (a packet with 06 in the version field and 0xFF as the beginning of the destination address), the Layer 3 switch forwards the packet to all other ports.

The **no** form of the command disables the IPv6 protocol VLAN.

Examples

The following example configures the IPv6 protocol-based VLAN.

```
device(config)# vlan 2
device(config-vlan-2)# ipv6-proto name V6
```

ipx-network

Configures the IPX network protocol-based VLANs.

Syntax

ipx-network *network-number ipx-frame-type* [**name** *string*]

no ipx-network *network-number ipx-frame-type* [**name** *string*]

Command Default

An IPX network protocol-based VLAN is not configured.

Parameters

network-number

Specifies the network number in hexadecimal format.

ipx-frame-type

Defines the IPX frame encapsulation standard types. The following are the supported encapsulation standard types:

ethernet_802.2

Specifies the Ethernet 802.2 standard that can be configured for the protocol.

ethernet_802.3

Specifies the Ethernet 803.3 standard that can be configured for the protocol.

ethernet_ii

Specifies the Ethernet II standard that can be configured for the protocol.

ethernet_snap

Specifies the Ethernet subnetwork access protocol standard that can be configured for the protocol.

name *string*

Specifies the Ethernet standard name. The string can be up to 32 characters in length.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command disables the IPX network protocol-based VLAN.

Examples

The following example shows how to configure the IPX network protocol-based VLAN.

```
device(config)# vlan 20 name IPX_VLAN by port
device(config-vlan-10)# untagged ethernet 1/2/1 to 1/2/6
added untagged port ethe 1/2/1 to 1/2/6 to port-vlan 20.
device(config-vlan-10)# ipx-network abcd ethernet_ii name Eng-LAN
```

ipx-proto

Configures the IPX protocol-based VLANs.

Syntax

ipx-proto [**name** *string*]

no ipx-proto [**name** *string*]

Command Default

An IPX protocol-based VLAN is not configured.

Parameters

name *string*

The IPX protocol-based VLAN name. The name can be up to 32 characters in length.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command removes the IPX protocol-based VLAN.

Examples

The following example shows the how to configure an IPX protocol-based VLAN.

```
device(config)# vlan 10 by port
device(config-vlan-10)# untagged ethernet 1/1/1 to 1/1/6
added untagged port ethe 1/1/1 to 1/1/6 to port-vlan 30.
device(config-vlan-10)# ip-proto name IP_Prot_VLAN
```

issu abort

Initiates an in service software upgrade (ISSU) termination.

Syntax

issu abort

Modes

Privileged EXEC mode

Usage Guidelines

This is a command that an operator uses to manually stop the currently running upgrade.

The upgrade terminates after the current unit, the one that is going through the upgrade, rejoins the stack.

If a manual abort is done or ISSU detects an abort condition (with ISSU started with no **on-error** option), the stack is left as it is and a manual recovery is required. You must reload the primary or secondary image to bring the stack back to working condition after issuing the **issu abort** command.

Examples

Follow this example to terminate an ISSU.

```
device# issu abort
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Added Campus Fabric (SPX) system support. (Note: FastIron 9.0.00 and later releases do not support Campus Fabric.)

issu primary

Initiates an in-service software upgrade (ISSU) using the image on the primary partition and configures the system to reload from either the primary image or the secondary image if the upgrade fails.

Syntax

issu primary[**on-error**{**reload-primary**|**reload-secondary** }]

Command Default

If an error occurs ths default behavior is to abort the ISSU.

Parameters

on-error

Specifies the action to take if there is an upgrade failure from the primary image.

reload-primary

Causes the system to reload from the primary partition if an upgrade from the primary partition fails.

reload-secondary

Causes the system to reload from the secondary partition if an upgrade from the primary partition fails.

Modes

Privileged EXEC mode

Usage Guidelines

Before you use this command, back up the running image to the secondary partition, use the existing image upgrade framework to copy the new image to the primary or secondary partition, and check the sequence of the upgrade with the **show issu sequence** command.

The **issu primary** command without any keywords initiates an ISSU.

If a manual abort is done or ISSU detects an abort condition (with ISSU started with no **on-error** option), the stack is left as is and a manual recovery is required.

If a manual recovery is required, you run either the **reload-primary** or **reload-secondary** command.

Examples

The following example shows how to start an ISSU, using an image that has been copied to the primary partition.

```
device# issu primary
Topology is Ring                        Yes
Standby Present                         Yes
Standby ready for upgrade               Yes
Flash use in progress                   No
Secure Setup in progress                No
ISSU in progress or aborted             No
Election pending                        No
Election in progress                    No
Reload pending                          No
CPU utilization high                    No
All units in ready state                Yes
Primary Image is upgrade compatible     Yes
Startup config and Running Config Same  Yes
User in Config mode                     No
Proceed with upgrade? (enter 'y' or 'n'):
```

If the system is not ready for an ISSU, the error condition is highlighted.

```
device# issu primary
Topology is Ring                        Yes
Standby Present                         No    ***
Standby ready for upgrade               No    ***
Flash use in progress                   No
Secure Setup in progress                No
ISSU in progress or aborted             No
Election pending                        No
Election in progress                    No
Reload pending                          No
CPU utilization high                    No
All units in ready state                Yes
Primary Image is upgrade compatible     Yes
Secondary Image is upgrade compatible   Yes
Startup config and Running Config Same  Yes
User in Config mode                     No
System not ready for issu. Check error condition highlighted by "***" and rectify.
ISSU not in progress
```

The behavior in case ISSU fails can be specified. In the following example the specified behavior is to reload the image on the secondary partition.

```
device# issu primary on-error reload-secondary
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Added Campus Fabric (SPX) system support. (Note: FastIron 9.0.00 and later releases do not support Campus Fabric.)

issu secondary

Initiates an in-service software upgrade (ISSU) using the image on the secondary partition and configures the system to reload from the image in either the primary partition or the secondary partition should the upgrade fail.

Syntax

issu secondary[**on-error**{**reload-primary**|**reload-secondary**}]

Command Default

If an error occurs ths default behavior is to abort the ISSU.

Parameters

on-error

Specifies the action to take if there is an upgrade failure from the secondary image.

reload-primary

Causes the system to reload from the primary partition if an upgrade from secondary partition fails.

reload-secondary

Causes the system to reload from the secondary partition if an upgrade from secondary partition fails.

Modes

Privileged EXEC mode

Usage Guidelines

Before you use this command, back up the running image to the primary partition, use the existing image upgrade framework to copy the new image to the primary or secondary partition, and check the sequence of upgrade with the **show issu sequence** command.

The **issu secondary** command without any keywords initiates an ISSU.

If a manual abort is done or ISSU detects an abort condition (with ISSU started with no **on-error** option), the stack is left as is and a manual recovery is required.

If a manual recovery is required, you run either the **reload-primary** or **reload-secondary** command.

Examples

The following example shows how to start an ISSU.

```
device# issu secondary
Topology is Ring                        Yes
Standby Present                         Yes
Standby ready for upgrade               Yes
Flash use in progress                   No
Secure Setup in progress                No
ISSU in progress or aborted             No
Election pending                        No
Election in progress                    No
Reload pending                          No
CPU utilization high                    No
All units in ready state                Yes
Primary Image is upgrade compatible     Yes
Startup config and Running Config Same  Yes
User in Config mode                     No
Proceed with upgrade? (enter 'y' or 'n'):
```

If the system is not ready for an ISSU, the error condition is highlighted.

```
device# issu secondary
Topology is Ring                        Yes
Standby Present                         No    ***
Standby ready for upgrade               No    ***
Flash use in progress                   No
Secure Setup in progress                No
ISSU in progress or aborted             No
Election pending                        No
Election in progress                    No
Reload pending                          No
CPU utilization high                    No
All units in ready state                Yes
Primary Image is upgrade compatible     Yes
Secondary Image is upgrade compatible   Yes
Startup config and Running Config Same  Yes
User in Config mode                     No
System not ready for issu. Check error condition highlighted by "***" and rectify.
ISSU not in progress
```

The behavior in case ISSU fails can be specified. In the following example the specified behavior is to reload the image on the secondary partition.

```
device# issu secondary on-error reload-secondary
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Added Campus Fabric (SPX) system support. (Note: FastIron 9.0.00 and later releases do not support Campus Fabric.)

Commands J, K, and L

jitc enable

Enables the Joint Interoperability Test Command (JITC) mode.

Syntax

jitc enable

no jitc enable

Command Default

JITC is not enabled.

Modes

Global configuration mode

Usage Guidelines

When JITC is enabled, the Advanced Encryption Standard - Cipher-Block Chaining (AES-CBC) encryption mode for the Secure Shell (SSH) protocol is disabled and the AES-CTR (Counter) encryption mode is enabled.

When JITC is enabled, the MD5 authentication scheme for NTP is disabled.

The **no** form of the command disables the JITC mode and puts the system back to the standard mode and enables both AES-CBC encryption mode and MD5 authentication configuration.

Examples

The following example enables the JITC mode.

```
device(config)# jitc enable
```

History

Release version	Command history
08.0.20a	This command was introduced.

jitc show

Displays the status of the JITC mode.

Syntax

jitc show

Modes

Privileged EXEC mode

Command Output

The **jitc show** command displays the following information.

Output field	Description
JITC mode	Displays the status of the JITC mode.
SSH AES-CTR mode	Displays the status of the SSH AES-CTR mode.
SSH AES-CBC mode	Displays the status of the SSH AES-CBC mode.

Examples

The following example shows the output of the **jitc show** command.

```
device(config)#jitc show
JITC mode : Enabled
Management Protocol Specific:
SSH AES-CTR mode : Enabled
SSH AES-CBC mode : Disabled
```

History

Release version	Command history
08.0.20a	This command was introduced.

jp-policy

Configures the IPv4 Protocol Independent Multicast (PIM) or IPv6 Protocol Independent Multicast (PIMv6) Join and Prune policy.

Syntax

jp-policy [*rp-address*] [*acl-name* | *acl-number*]

no jp-policy [*rp-address*] [*acl-name* | *acl-number*]

Command Default

The join and prune policy is not congifured for IPv4 PIM or PIMv6.

Parameters

rp-address

Specifies an IPv4 or IPv6 RP address.

acl-name

Specifies an ACL name.

acl-number

Specifies an ACL number. Valid values range from 100 through 199.

Modes

PIM router configuration mode

IPv6 PIM router configuration mode

Usage Guidelines

ACL rules are used to configure which multicast group addresses PIM (*, G) are sent to the RP, and which are to be dropped or allowed. Multicast group address and prefixes are configured as destination IP addresses and prefixes in the extended ACL rules. Because this ACL is used for PIM (RP, G) filtering, the source IP address/prefixes in the case of extended ACL rules are ignored.

Only one ACL can be applied to an RP addres. The configuration is limited to a maximum 64 RPs in a given VRF.

If the specified ACL is not configured, then the PIM (*, G) Join and Prune messages sent to that RP for all multicast group addresses are dropped.

Only one ACL can be applied to both PIM (*, G) and (S, G) Join and Prune filtering at a time.

Standard and extended ACLs are supported for IPv4 (RP, G). Group addresses and prefixes can be configured as the source IP addresses in the standard ACL rules.

The **no** form of the command unconfigures perviously configured IPv4 PIM or PIMv6 Join and Prune policies.

Examples

The following example configures the PIM (RP, G) Join and Prune policy for a non-default VRF instance. An ACL number is specified.

```
device# configure terminal
device# router pim vrf blue
device(config-pim-router-vrf-blue)# jp-policy 10.9.9.9 1
device(config-pim-router-vrf-blue)# jp-policy 22.9.9.9 22
device(config-pim-router-vrf-blue)# jp-policy 100.9.9.9 1
```

The following example configures the PIM (*, G) and (S, G) Join and Prune policy for the default VRF. An ACL name is specified.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# jp-policy wg-sg-acl
```

The following example configures the PIMv6 (RP, G) Join and Prune policy for a non-default VRF instance in IPv6 PIM router configuration mode. An ACL name is specified.

```
device# configure terminal
device# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# jp-policy 10:10::10:10 testacl
device(config-ipv6-pim-router-vrf-blue)# jp-policy 22:9::9:9 testacl
device(config-ipv6-pim-router-vrf-blue)# jp-policy 100:9::9:9 testacl
```

The following example unconfigures a previously configured PIM (RP, G) Join and Prune policy for a non-default VRF instance.

```
device(config-pim-router-vrf-blue)# no jp-policy 10.9.9.9    1
device(config-pim-router-vrf-blue)# no jp-policy 22.9.9.9    22
device(config-pim-router-vrf-blue)# no jp-policy 100.9.9.9   1
```

The following example unconfigures a previously configured PIM (*, G) and (S, G) Join and Prune policy.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# no jp-policy wg-sg-acl
```

The following example configures PIMv6 (*, G) and (S, G) Join and Prune policy for the default VRF. An ACL name is specified

```
device# configure terminal
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# jp-policy wg-sg-acl
```

The following example unconfigures a previously configured PIM (*, G) and (S, G) Join and Prune policy.

```
device# configure terminal
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# no jp-policy wg-sg-acl
```

History

Release version	Command history
09.0.10	This command was introduced.

jumbo

Provides support for jumbo frames.

Syntax

jumbo

no jumbo

Command Default

Jumbo frame support is disabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables jumbo frame support.

NOTE
Jumbo mode is not applicable for protocols used to access the switch including SSH, Telnet, SNMP, Web management, RADIUS, TACACS+ and also on the Out of Band management port.

Examples

The following example provides jumbo frame support.

```
device(config)# jumbo
```

keep-alive-vlan

Configures a keep-alive VLAN for the cluster.

Syntax

keep-alive-vlan *vlan-ID*

no keep-alive-vlan *vlan-ID*

Command Default

A keep-alive VLAN is not configured.

Parameters

vlan-ID

Specifies the VLAN number. The values can be from 1 through 4089.

Modes

Cluster configuration mode

Usage Guidelines

Only one VLAN can be configured as a keep-alive VLAN. The keep-alive VLAN cannot be a member VLAN of the Multi-Chassis Trunking (MCT) and this VLAN can be tagged or untagged.

When the CCP is down, the following results occur:

- If the keep-alive VLAN is configured, CCRR messages are sent every second over that VLAN.
- If no packets are received from the peer device for a period of three seconds, the peer is considered down.
- If a keep-alive VLAN is not configured and both the peer devices are up, both peers continue forwarding traffic independently, when the CCP is down.

  NOTE
  Keep-alive VLAN configuration is not allowed when the client isolation mode is strict; and when the keep-alive VLAN is configured, client isolation mode cannot be configured as strict.

The **no** form of the command removes the keep-alive VLAN configuration.

Examples

The following example shows how to configure the keep-alive VLAN.

```
device(config)# cluster SX 400
device(config-cluster-SX)# keep-alive-vlan 10
```

keepalive

Configures GRE link keepalive.

Syntax

keepalive [*interval* [*retries*]]

no keepalive [*interval* [*retries*]]

Command Default

GRE link keepalive is not enabled.

Parameters

interval

Specifies the number of seconds between each initiation of a keepalive message. The range if from 2 to 32767 seconds and the default is 10 seconds.

retries

Specifies the number of times that a packet is sent before the system places the tunnel in the DOWN state. Valid values are from 1 through 255. The default number of retries is 3.

Modes

Tunnel interface configuration mode

Usage Guidelines

When GRE tunnels are used in combination with static routing or policy-based routing, and a dynamic routing protocol such as RIP, BGP, or OSPF is not deployed over the GRE tunnel, a configured tunnel does not have the ability to bring down the line protocol of either tunnel endpoint, if the far end becomes unreachable. Traffic sent on the tunnel cannot follow alternate paths because the tunnel is always UP. To avoid this scenario, enable GRE link keepalive, which will maintain or place the tunnel in an UP or DOWN state based upon the periodic sending of keepalive packets and the monitoring of \responses to the packets. If the packets fail to reach the tunnel far end more frequently than the configured number of retries, the tunnel is placed in the DOWN state

The **no** form of the command disables GRE keepalive.

Examples

The following example enables GRE keepalive and sets the keepalive interval and retries.

```
device(config)# keepalive 500 150
```

keepalive (IKEv2)

Configures the interval between Internet Key Exchange version 2 (IKEv2) messages that are sent to detect if a peer is still alive.

Syntax

keepalive *interval*

no keepalive *interval*

Command Default

IKEv2 keepalive is enabled and the keepalive interval is 300 seconds.

Parameters

interval

Specifies the number of seconds between each initiation of an IKEv2 notify message. The range is from 10 through 3600. A value of 0 disables the keepalive function.

Modes

IKEv2 profile configuration mode

Usage Guidelines

The **no** form of the command restores the default configuration.

Examples

The following example shows how to configure a keepalive interval of 500 seconds for an IKEv2 profile named prof_mktg.

```
device(config)ikev2 profile prof_mktg
device(config-ike-profile-prof_mktg)# keepalive 500
```

History

Release version	Command history
08.0.50	This command was introduced.

keychain

Configures a name for the keychain.

Syntax

keychain *keychain-name*

no keychain *keychain-name*

Command Default

A keychain is not configured by default.

Parameters

keychain-name

Specifies the name of the keychain.

Modes

Global configuration mode

Usage Guidelines

A maximum of up to 64 keychains can be configured.

This command takes the configuration to the keychain configuration mode, in which key identifiers can be added.

The **no** form of the command removes the keychain.

Examples

The following example configures a keychain.

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)#
```

History

Release	Command History
08.0.70	This command was introduced.

keychain mka

Configures a keychain module specific to MACsec.

Syntax

keychain { *name* **mka** }

no keychain { *name* **mka** }

Command Default

By default, no keychain is defined.

Parameters

name

Names the keychain.

mka

Specifies that the keychain is a MACsec Key Agreement (MKA) keychain.

Modes

Global configuration mode

Usage Guidelines

Keychains are an alternative to configuring a single pre-shared key on each MACsec interface. Each key contains a pre-configured password, authentication algorithm, and a send lifetime configuration.

The **no** form of the command deletes the keychain.

A maximum of eight MKA keychains can be configured.

Each MKA keychain can hold up to 32 keys.

An MKA keychain is allowed as part of interface configuration when a pre-shared key is not configured on the interface.

Specification of a key under a keychain shall be the same between peers for establishing a secure MACSec connection.

For each key ID, a password, authentication-algorithm, and send-lifetime start and end time are configured. If the keywords **end infinite** are configured as shown in the example instead of a specific end time, the key remains active indefinitely.

The default timezone used for calculating start and end times is GMT. As an option, you can configure the MKA keychain to use local time as configured in the system.

Because of the potential for key overlap when the duration between the first key end-time and the following key start-time is short, RUCKUS recommends that you configure a minimum tolerance of 180 seconds to maintain hitless key rollover.

Examples

The following example creates the MKA keychain "macsec1" and configures the underlying options.

```
device# configure terminal
device(config)# keychain macsec1 mka
device(config-keychain-mka-macsec1)# key-id 1
device(config-keychain-mka-macsec1-key-1)# password ........
device(config-keychain-mka-macsec1-key-1)# authentication-algorithm aes-256-cmac
device(config-keychain-mka-macsec1-key-1)# send-lifetime start 02-14-2022 01:01:01 end infinite
device(config-keychain-mka-sample-key-100)# local
device(config-keychain-mka-sample-key-100)# tolerance 200
device(config-keychain-mka-macsec1-key-1)# end
device#
```

History

Release version	Command history
09.0.10b	This command was introduced.

keychain tcp

Configures a keychain module specific to TCP.

Syntax

keychain *keychain-name* **tcp**

no keychain *keychain-name* **tcp**

Command Default

No keychain is configured by default.

Parameters

keychain-name

Specifies the name of the keychain.

tcp

Specifies that the keychain can be applied only to TCP connections.

TCP Authentication Options (AO):

[no] accept-ao-mismatch

Determines whether the ICX device accepts or denies TCP segments with a mismatch in TCP-AO support between the TCP peers. By default, mismatched segments are accepted. When the option is disabled, TCP-AO packets with a mismatch are discarded.

[no] authentication-algorithm aes-128-cmac

Configures the aes-128-cmac algorithm for TCP authentication. The algorithm **hmac-sha-1** is also supported.

[no] include-tcp-options

Determines whether all TCP options are included in the Message Authentication Code (MAC) calculation. By default, all TCP options are included. When the **no** form of the command is configured, only the TCP-AO option is included in the MAC calculation.

[no] recv-id *id*

Configures the identifier to be compared with the key identifier received in a TCP segment. Valid values are 0 through 255 decimal. The **no** form of the command removes the identifier.

[no] send-id *id*

Configures the identifier sent in an outgoing TCP segment. Valid values are 0 through 255 decimal. The **no** form of the command removes the identifier.

Modes

Global configuration mode

Usage Guidelines

A maximum of 64 keychains can be configured, including TCP keychains and other types.

The **keychain** *keychain-name* **tcp** command takes the configuration to the TCP keychain configuration mode, in which the listed TCP-specific commands can be configured.

The **no** form of the **keychain** *keychain-name* **tcp** command removes the keychain.

The **keychain** *keychain-name* **tcp** command is not supported on devices.

TCP Keepalive is enabled for all TCP-AO-enabled connections and cannot be disabled, even if disabled at the global level.

TCP-AO and TCP MD5 cannot be used in the same connection.

BGP and MSDP peer sessions must be cleared for the new TCP-AO configuration to take effect.

The send identifier configured at one end of the TCP peer connection must match the receive identifier at the other end of the connection.

Neither the send-id nor the recv-id can be reused for another key in the same keychain.

Examples

The following example configures a TCP keychain and underlying options.

```
device# configure terminal
device(config)# keychain mykey tcp
device(config-keychain-tcp-mykey)# key-id 1
device(config-keychain-tcp-mykey-key-1)# password mykey
device(config-keychain-tcp-mykey-key-1)# authentication-algorithm aes-128-cmac
device(config-keychain-tcp-mykey-key-1)# send-id 1
device(config-keychain-tcp-mykey-key-1)# recv-id 1
device(config-keychain-tcp-mykey-key-1)#  no accept-ao-mismatch
device(config-keychain-tcp-mykey-key-1)#  no include-tcp-options
device(config-keychain-tcp-mykey-key-1)# send-lifetime start 06-01-2021 01:01:01 end 09-25-2021 06:59:00
device(config-keychain-tcp-mykey-key-1)#  accept-lifetime start 05-01-2021 00:00:00 end 09-25-2021
00:00:00
device(config-keychain-tcp-mykey-key-1)#
```

History

Release	Command History
09.0.10	This command was introduced.

key-id

Configures a key in the keychain by specifying a key identifier.

Syntax

key-id *key-num*

no key-id *key-num*

Command Default

A key is not configured by default.

Parameters

key-num

Specifies the key identifier of the key. The valid range is from 1 through 4294967296.

Modes

Keychain configuration mode

Usage Guidelines

A maximum of 1024 keys can be configured across all the keychains.

Each key ID within a keychain has its own properties such as key string, authentication algorithm, send lifetime, and accept lifetime. A key is considered valid only if the key has a lifetime that has not expired, and the password and authentication algorithm have been specified.

The range of returned key IDs usable varies with the protocol. For each protocol, the key ID must be within a valid range. For example, the valid range of key IDs for OSPFv2 is from 1 through 255. The application that uses the keychain module can reject the key IDs that are outside the permitted range. However, the keychain module does not place any restrictions in terms of user configuration of the key ID.

The **no** form of the command deletes the key.

Examples

The following example configures a key in a keychain.

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)# key-id 10
device(config-keychain-xprotocol-key-10)#
```

History

Release	Command History
08.0.70	This command was introduced.

key-rollover-interval

Alters the timing of the existing configuration changeover.

Syntax

key-rollover-interval *interval*

no key-rollover-interval *interval*

Parameters

interval

Specifies the key-rollover-interval in seconds. Valid values range from 0 through 14400. The default is 300 seconds.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

In order to have consistent security parameters, rekeying should be done on all nodes at the same time. Use the **key-rollover-interval** command to facilitate this. The key rollover timer waits for a specified period of time before switching to the new set of keys. Use this command to ensure that all the nodes switch to the new set of keys at the same time.

The **no** form of the command resets the rollover interval to the default value of 300 seconds.

Examples

The following example sets the key rollover interval to 420 seconds.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# key-rollover-interval 420
```

The following example re-sets the key rollover interval to the default value.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# no key-rollover-interval 420
```

The following example re-sets the key rollover interval to the default value in a nondefault VRF instance.

```
device# configure terminal
device(config)# ipv6 router ospf vrf red
device(config-ospf6-router-vrf-red))# no key-rollover-interval 420
```

key-server-priority

Configures the MACsec key-server priority for the MACsec Key Agreement (MKA) group.

Syntax

key-server-priority*value*

no key-server-priority*value*

Command Default

Key-server priority is set to 16. This is not displayed in configuration details.

Parameters

value

Specifies key-server priority. The possible values range from 0 to 255, where 0 is highest priority and 255 is lowest priority.

Modes

dot1x-mka-cfg-group mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The **no** form of the command removes the previous priority setting.

During key-server election, the server with the highest priority (the server with the lowest key-server priority value) becomes the key-server.

Examples

The following example sets the key-server priority for MKA group test1 to 5.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# key-server-priority 5
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.20a	This command was modified. The key-server priority value range was increased from 0 through 127 to 0 through 255.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

kill

Terminates active CLI sessions.

Syntax

kill console { **all** | *unit-number* }

kill { **ssh** { **all** | *session-number* } | **telnet** *session-number* }

Parameters

console
: Logs out console sessions in a stack.

all
: For console, logs out all console ports on stack units that are not the Active Controller. For SSH, terminates all active SSH sessions.

unit-number
: Logs out the console port on a specified unit.

ssh
: Terminates an active SSH session.

telnet
: Terminates an active Telnet session.

session-number
: The Telnet or SSH session number.

Modes

Privileged EXEC mode

Usage Guidelines

Once the AAA console is enabled, you should log out any open console ports on your traditional stack using the **kill console** command.

Examples

The following example shows how to log out from all console ports on stack units that are not the Active Controller.

```
device# kill console all
```

The following example shows how to terminate an active SSH connection.

```
device# kill ssh 1
```

lacp-mode

Configures Link Aggregation Control Protocol (LACP) operation mode for dynamic LAG as passive.

Syntax

lacp-mode passive

no lacp-mode passive

Command Default

The LACP operation mode is active.

Parameters

passive

Configures LACP as passive. This option is applicable only for dynamic LAGs.

Modes

LAG configuration mode

Usage Guidelines

For dynamic LAGs, LACP is activated on all of the LAG ports.

The **no** form of the command changes the LACP operation mode of the dynamic LAG to the active mode (default mode).

Examples

The following example configures LACP operation mode for dynamic LAG as passive.

```
device(config)# lag blue dynamic id 11
device(config-lag-blue)# lacp-mode passive
```

History

Release version	Command history
08.0.61	This command was introduced.

lacp-timeout

Configures the timeout mode for the port.

Syntax

lacp-timeout { **long** | **short** }

no lacp-timeout { **long** | **short** }

Command Default

Begins with the short timeout period. Moves to the long timeout period after the LAG is established.

Parameters

long

Specifies a long timeout period for the port which is 90 seconds.

short

Specifies a short timeout period for the port which is 3 seconds.

Modes

LAG configuration mode

Usage Guidelines

After you configure a port timeout mode, the port remains in that timeout mode whether it is up or down and whether or not it is part of a LAG. All the ports in a LAG must have the same timeout mode. This requirement is checked when the LAG is enabled on the ports.

With the long timeout configuration, an LACPDU is sent every 30 seconds. If no response comes from its partner after three LACPDUs are sent, a timeout event occurs, and the LACP state machine transitions to the appropriate state based on its current state.

In the short timeout configuration, an LACPDU is sent every second. If no response comes from its partner after three LACPDUs are sent, a timeout event occurs, and the LACP state machine transitions to the appropriate state based on its current state. If you do not include **long** or **short**, the device operates based on the IEEE specification standards.

NOTE
The configuration of lacp-timeout is applicable to dynamic or keep-alive LAGs only.

The **no** form of the command resets the timeout mode to short.

Examples

The following example shows how to configure a port for a short LACP timeout.

```
device(config)# lag blue dynamic id 11
device(config-lag-blue)# lacp-timeout short
```

lag

Creates a Link Aggregation Group (LAG).

Syntax

lag *lag-name* { **dynamic** | **static** } { **id** { *number* | **auto** } }

no lag *lag-name* { **dynamic** | **static** } { **id** { *number* | **auto** } }

lag *lag-name* **keep-alive**

no lag *lag-name* **keep-alive**

Command Default

LAG is not configured

Parameters

lag-name

Specifies the name of the LAG as an ASCII string. The LAG name can be up to 64 characters in length.

dynamic

Configures a dynamic LAG.

static

Configures a static LAG.

id *number*

Specifies a LAG ID. The value ranges from 1 through 2047. The range is from 1 through 256 for user LAG and 256 and above for SPX LAG.

auto

Auto generates a LAG ID.

keep-alive

Configures a keep-alive LAG.

Modes

Global configuration mode

Usage Guidelines

The keep-alive LAG configuration can be used to configure a LAG for use in keep-alive applications similar to the UDLD.

A keep-alive LAG contains only one port while static and dynamic LAGs can have 1 to 8 or 1 to 12 ports depending on the device.

LAG IDs are unique for each LAG in the system. A LAG ID cannot be assigned to more than one LAG. If a LAG ID is already used, the CLI will reject the new LAG configuration and display an error message that suggests the next available LAG ID that can be used.

NOTE
The LAG ID parameter is applicable for static and dynamic LAGs only. No explicit configuration of a LAG ID is allowed on keep-alive LAGs.

The **no** form of the command removes the LAG.

Examples

The following example shows how to configure a static LAG.

```
device(config)# lag blue static id 11
device(config-lag-blue)# ports ethernet 1/1/1 ethernet 1/1/5
```

History

Release version	Command history
08.0.61	This command was modified to make the **id** option a mandatory configuration parameter and to make the subsequent options (*id-number* and **auto**) mandatory.

lag-mac

Assigns a static MAC address to the LAG virtual interface.

Syntax

lag-mac *mac-address*

no lag-mac *mac-address*

Command Default

The first physical port that is being added to the LAG becomes the MAC provider for the LAG virtual interface.

Parameters

mac-address

Specifies the MAC address for the LAG virtual interface.

Modes

LAG configuration mode

Usage Guidelines

If VE/L3 is configured on the LAG, the **show interface brief** command output displays the stack-mac as the LAG virtual interface MAC.

The **no** form of the command removes the ststic MAC address assigned to the LAG virtual interface.

Examples

The following example assigns a static MAC address to the LAG virtual interface.

```
device(config)# lag blue dynamic id 11
device(config-lag-blue)# lag-mac 0000.000f.e9a0
```

History

Release version	Command history
08.0.61	This command was introduced.

learn-default

Configures the device to learn default RIP routes, either globally or at the interface level.

Syntax

learn-default

ip rip learn-default

no learn-default *device/slot/port*

no ip rip learn-default *device/slot/port*

Command Default

By default, the device does not learn default RIP routes.

Modes

RIP router configuration mode or interface configuration mode.

Usage Guidelines

The **no** form of the command disables learning of default RIP routes.

The configurations at the global level and interface level are independent. Disabling or enabling one will not affect the other. When global level configuration is enabled, default routes are learned from all the interfaces. If global "learn-default " is not enabled but the interface-level "learn-default" is enabled, default routes are allowed from that rip interface. If "learn default" is not enabled for an interface, then the learned default routes for that interface are discarded.

Examples

The following example enables learning of default RIP routes globally.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# learn-default
```

The following command output shows RIP default routes are learned globally.

```
device(config)# show ip rip
  RIP Summary
  Default port 520
      Administrative distance is 120
      Updates every 30 seconds, expire after 180
      Holddown lasts 180 seconds, garbage collect after 120
      Last broadcast  28, Next Update 30
      Need trigger update  0, Next trigger broadcast 4
      Minimum update  interval 25, Max update Offset 5
      Split horizon is on; poison reverse is off
      Import metric 1
      Default routes are accepted
      Prefix List, Inbound : Not set
      Prefix List, Outbound : Not set
      Route-map, Inbound : Not set
      Route-map, Outbound : Not set
      Redistribute:
  No Neighbors are configured in RIP Neighbor Filter Table
```

The following example enables learning of default RIP routes on Ethernet interface 1/1/6.

```
device# configure terminal
device(config)# interface ethernet 1/1/6
device(config-if-e10000-1/1/6)# ip rip learn-default
```

The following command output shows that RIP default routes are learned for the interface.

```
device(config)# show ip rip interface ethernet 1/1/16
Interface e 1/1/16
 RIP Mode : Version2 Running: TRUE
 Route summarization disabled
 Split horizon is on; poison reverse is off
 Default routes are accepted
 Metric-offset, Inbound 1
 Metric-offset, Outbound 0
 Prefix List, Inbound : Not set
      Prefix List, Outbound : Not set
 Route-map, Inbound : Not set
 Route-map, Outbound : Not set
 RIP Sent/Receive packet statistics:
    Sent : Request 0 Response 0
    Received : Total 0 Request 0 Response 0 UnRecognised 0
 RIP Error packet statistics:
    Rejected 0  Version 0 RespFormat 0 AddrFamily 0
    Metric 0 ReqFormat 0
```

lease

Specifies the lease period for the DHCP address pool.

Syntax

lease *days hours minutes*

Parameters

days hours minutes

Specifies the lease duration in days, hours, and minutes.

Modes

DHCP server pool configuration mode

Usage Guidelines

You can set a lease duration for just days, just hours or just minutes, or any combination of the three.

Examples

The following example specifies the lease period as one day, four hours and 32 minutes.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# lease 1 4 32
```

lease-count

Configures the number of lease IP addresses used for the DHCP address pool.

Syntax

lease-count*number-of-ip-addresses*

Command Default

The lease count is filled based on the available leases in the address pool, as well as the overall available leases.

Parameters

number-of-ip-addresses

Specifies the number of lease IP addresses. The maximum value is 3000.

Modes

DHCP server pool configuration mode

Usage Guidelines

A maximum of 3000 leases can be configured. When 3000 leases are allocated, the configuration under any remaining pools is removed from the configuration.

The **no** form of the command removes the configured number of lease IP addresses for the DHCP address pools.

Examples

The following example sets the number of lease IP addresses used for the DHCP address pool to 2500.

```
device# configure terminal
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# lease-count 2500
```

History

Release version	Command history
09.0.10a	This command was introduced.

led

Sets the port LED status to on, off, or the default status.

Syntax

led { **default** | **off** | **on** } [**unit** *unit-id*]

led blink *interval*

led blink stack [*interval*] [**all**]

Command Default

The status of the LEDs according to the current status mode is the default if status mode is supported; otherwise, the link status or port status is considered to be the default LED status.

Parameters

default
: Turns on all port LEDs with the default status.

off
: Turns off the port LEDs.

on
: Turns on all the port LEDs to display steady green irrespective of the port status.

unit *unit-id*
: Specifies the stack unit that you want to locate.

blink
: Turn on all port LEDs to blink green.

interval
: Specifies the blink interval in seconds. Valid values range from 15 through 120 seconds.

stack
: Specifies the stack.

all
: Specifies all stack units.

Modes

Privileged EXEC mode

Usage Guidelines

The status mode feature cannot be used when port LEDs are turned on to locate a device. If the status mode is changed, the LED status will be changed to the respective mode.

NOTE
The LED ON/OFF feature is supported only on the platforms where LED status mode is available. The status mode is supported for the ICX 7650, ICX 7850, and ICX 8200 devices.

The default LED status is the status of the LEDs according to the current status mode, if the status mode is supported. If the status mode is not supported, the link status or port status is considered to be the default LED status.

If the status of the port changes due to any events such as link up or link down, USB plug in or USB plug out, optical interruption, and so on, the LED status of that particular port LED is changed.

Examples

The following example shows how to turn on port LEDs on a standalone or stack unit.

```
device# led on
```

The following example shows how to turn on port LEDs to locate a unit in a stack from the active unit.

```
device# led on unit 5
```

History

Release version	Command history
08.0.92	This command was introduced.
09.0.00	The **blink** keyword was added.

legacy-inline-power

Enables legacy power-consuming device detection globally, on multiple interfaces or on all ports of the stack.

Syntax

legacy-inline-power[**ethernet***unit /slot/port*[**to***unit /slot/port*|[**ethernet***unit /slot/port***to***unit /slot/port*|**ethernet***unit /slot/port*]...]]

no legacy-inline-power[**ethernet***unit /slot/port*[**to***unit /slot/port*|[**ethernet***unit /slot/port***to***unit /slot/port*|**ethernet***unit /slot/port*]...]]

Parameters

ethernet*unit/slot/port*

Enables legacy power-consuming device detection on specific interfaces.

to*unit/slot/port*

Specifies the range of ports on which you want to enable legacy power-consuming device detection.

Command Default

PoE support for legacy power-consuming devices are not enabled by default.

Modes

Global configuration mode

Stack configuration mode

Usage Guidelines

Do not enable this command on ports where power-consuming devices are not connected.

With global configuration enabled, if the **legacy-inline-power** is configured at the interface level, it will be displayed in the interface level running configuration. Port-level legacy power-consuming device detection cannot be disabled from the global configuration mode. That is, when the **legacy-inline-power** configuration is removed globally (from enable configuration), it is not required for the user to configure **legacy-inline power** on the individual ports where it was already enabled.

By default, the **legacy-inline-power** command reserves 30 watts.

When the legacy support is disabled, 802.3af- and 802.3at-compliant devices are not affected.

The **no** form of the command disables support for PoE legacy power-consuming devices.

Examples

The following example enables support for legacy power-consuming devices on multiple interfaces.

```
device(config)# legacy-inline-power ethernet 1/1/1 to 1/1/10
```

History

Release version	Command history
08.0.70	This command was modified to allow legacy power-consuming device detection on multiple interfaces or to all ports of the stack or SPX.

legacy-inline-power (Interface)

Enables legacy power-consuming device detection at the port level.

Syntax

legacy-inline-power

no legacy-inline-power

Command Default

PoE support for legacy power-consuming devices are not enabled by default.

Modes

Interface subtype configuration mode

Usage Guidelines

Do not enable this command on ports where power-consuming devices are not connected.

With global configuration enabled, if the **legacy-inline-power** is configured at the interface level, it will be displayed in the interface level running configuration. Port-level legacy power-consuming device detection cannot be disabled from the global configuration mode. That is, when the **legacy-inline-power** configuration is removed globally (from enable configuration), it is not required for the user to configure **legacy-inline power** on the individual ports where it was already enabled.

By default, the **legacy-inline-power** command reserves 30 watts.

When the legacy support is disabled, 802.3af- and 802.3at-compliant devices are not affected.

The **no** form of the command disables support for PoE legacy power-consuming devices.

Examples

The following example enables support for legacy power-consuming devices on a specific interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# legacy-inline-power
```

History

Release version	Command history
08.0.70	This command was introduced at the interface configuration mode.

license delete perpetual

Deletes a software feature license and restores the default license option.

Syntax

license delete perpetual*unit-IDlicense-name*

Command Default

The feature license is installed.

Parameters

unit-id

Specifies the unit ID on the device. For a standalone, the unit number is 1. For a stack unit, use the assigned stack unit number.

license-name

Specifies the license to be deleted. Options depend on the platform, but include the following:

- l3-prem
- macsec
- 2x10g
- 8x10g
- 2x10gr
- 4x10gr
- 8x10gr

Modes

Privileged EXEC level

Usage Guidelines

After deleting a license, the licensed feature will continue working until a reload.

History

Release version	Command history
08.0.80	This command was introduced.

license delete unit

Deletes an XML software license and restores the default license option.

Syntax

license delete unit*unit_id* [**all**|**index***license_index*]

Parameters

unit_id

Specifies the unit ID number. For a standalone device, the unit number is 1. For a stack unit, use the assigned stack unit number.

all

Deletes all XML licenses on the specified unit.

index*license_index*

Specifies the software license file, and is generated by the member unit. The license index number is the license file you want to delete from a unit. The license index number is not unique across stack units, and you must specify both the unit number and the index number to delete a license from a specific unit.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **license delete perpetual** command to delete an SAU license.

Examples

The following example delete the license file as specified.

```
device# license delete unit 1 index 1
device# license delete unit 1 index 2
```

Use the all option to delete all license files for a specific unit.

```
device# license delete unit 1 all
```

History

Release version	Command history
07.1.00	This command was introduced.
08.0.80	The description was updated to indicate that it deletes XML license files only. It does not delete SAU licenses.

license install perpetual

Installs a licensed feature on a device.

Syntax

license install perpetual*unit-idlicense-package*

Command Default

License install perpetual is disabled.

Parameters

unit-id

Specifies the unit ID on the device. For a standalone, the unit number is 1. For a stack unit, use the assigned stack unit number.

license-package

Specifies the license name you have purchased and installed on the device. Options depend on the platform, but include the following:

- l3-prem
- macsec
- 2x10g
- 8x10g
- 2x10gr
- 4x10gr
- 8x10gr
- 4x1g
- 2x1g

Modes

Privileged EXEC mode

Usage Guidelines

The command replaces the licensing commands for installing or deleting an XML license file.

Examples

The following example installs a perpetual 4x10GR license on unit 1.

```
device# license install perpetual 1 4x10GR
```

History

Release version	Command history
08.0.60	This command was introduced.
08.0.80	Support for this command was added to all the RUCKUS ICX 7xxx devices.

license set serial-number

Specifies the serial number of a software feature license on a device.

Syntax

license set serial-number{*unit-IDlicense-typeserial-number*}

Command Default

The license serial number is not specified.

Parameters

unit-ID

Specifies the unit ID on the device. For a standalone, the unit number is 1. For a stack unit, use the assigned stack unit number.

license-type

Specifies the type of SAU license. Options depend on the platform, but include the following:

- l3-prem
- pod
- macsec

serial-number

License serial number.

Modes

Privileged EXEC mode

Usage Guidelines

Every license has a unique serial number. Once the license serial number has been specified on the device, it will appear in the **show license installed** command output and be available via SNMP.

The license serial number will be deleted if its corresponding license is deleted from the device.

Examples

The following example sets the license serial number for a Layer 3 Premium license on unit 1 of the device:

```
device# license set serial-number 1 l3-prem PR320400289
```

History

Release version	Command history
08.0.80	This command was introduced.

lifetime (IKEv2)

Configures the lifetime period of an Internet Key Exchange version 2 (IKEv2) security association (SA) for an IKEv2 profile.

Syntax

lifetime *minutes*

no lifetime *minutes*

Command Default

The default lifetime period for an IKEv2 SA is 43200 minutes (30 days).

Parameters

minutes

Specifies the lifetime period (in minutes) for an IKEv2 SA. The range is from 10 through 43200.

Modes

IKEv2 profile configuration mode

Usage Guidelines

The **no** form of the command resets the IKEv2 SA lifetime period to the default value.

NOTE
During rekey, minor traffic loss is possible due to hardware programming delays.

Examples

The following example shows how to set the IKEv2 SA lifetime value to 15000 minutes for an IKEv2 profile named prof-mktg.

```
device(config)# ikev2 profile prof-mktg
device(config-ike-profile-prof-mktg)# lifetime 15000
```

History

Release version	Command history
08.0.50	This command was introduced.

link-config gig copper autoneg-control

Configures the maximum advertised speed on a port that has auto-negotiation enabled.

Syntax

link-config gig copper autoneg-control{**100m-auto**|**10m-auto** }{[**ethernet***unit/slot/port*[**to***unit/slot/port*]...]}

no link-config gig copper autoneg-control{**100m-auto**|**10m-auto** }{[**ethernet***unit/slot/port*[**to***unit/slot/port*]...]}

Command Default

The maximum port speed advertisement is not configured.

Parameters

100m-auto
Configures a port to advertise a maximum speed of 100 Mbps.

10m-auto
Configures a port to advertise a maximum speed of 10 Mbps.

ethernet*unit/slot/port*[**to***unit/slot/port*]
Specifies the Ethernet interface, set of interfaces, or range of interfaces.

to
When followed by a port number, onfigures a range of ports.

Modes

Global configuration mode

Usage Guidelines

The maximum port speed advertisement works only when auto-negotiation is enabled (CLI command **speed-duplex auto**). If auto-negotiation is off, the device rejects the maximum port speed advertisement configuration.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The **no** form of the command disables the maximum port speed advertisement.

Examples

The following command configures a maximum port speed advertisement of 10 Mbps on a port that has auto-negotiation enabled.

```
device(config)# link-config gig copper autoneg-control 10m-auto ethernet 1/1/1
```

History

Release version	Command history
08.0.40	The **downshift** option was removed.

link-error-disable

Configures port flap dampening on an interface.

Syntax

link-error-disable *toggle-threshold sampling-time-in-sec wait-time-in-sec*

no link-error-disable *toggle-threshold sampling-time-in-sec wait-time-in-sec*

Command Default

Port flap dampening is not configured.

Parameters

toggle-threshold

Specifies the number of times a port link state goes from up to down and down to up before the wait period is activated. The value ranges from 1 through 50.

sampling-time-in-sec

Specifies the amount of time, in seconds, during which the specified toggle threshold can occur before the wait period is activated. The default value is 0 and indicates that the time is forever. The value ranges from 0 through 65535.

wait-time-in-sec

Specifies the amount of time, in seconds, for which the port remains disabled (down) before it becomes enabled. The value ranges from 0 through 65535. A value of 0 indicates that the port will stay down until an administrative override occurs.

Modes

Interface configuration mode

Usage Guidelines

A RUCKUS device counts the number of times a port link state toggles from "up to down", and not from "down to up".

The sampling time or window (the time during which the specified toggle threshold can occur before the wait period is activated) is triggered when the first "up to down" transition occurs.

If the port link state toggles from up to down for a specified number of times within a specified period, the interface is physically disabled for the specified wait period. Once the wait period expires, the port link state is re-enabled. However, if the wait period is set to zero (0) seconds, the port link state will remain disabled until it is manually re-enabled.

You can configure the port flap dampening feature on the LAG virtual interface using the **link-error-disable** command. Once configured on the LAG virtual interface, the feature is enabled on all ports that are members of the LAG. You cannot configure port flap dampening on port members of the LAG.

The **no** form of the command re-enables a port that was disabled by port flap dampening once the wait period expires.

Examples

The following example configures port flap dampening on an interface.

```
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# link-error-disable 10 3 10
```

link-fault-signal

Enables Link Fault Signaling (LFS) between 10 Gbps Ethernet devices.

Syntax

link-fault-signal

no link-fault-signal

Command Default

LFS is disabled by default on all RUCKUS FastIron devices.

Modes

Interface configuration mode

Usage Guidelines

When configured on a RUCKUS 10 Gbps Ethernet port, the port can detect and report fault conditions on transmit and receive ports. RUCKUS recommends enabling LFS on both ends of a link.

Enable LFS on any device prior to connecting the device to FastIron platforms. Any connecting device must have LFS currently enabled to ensure interoperability. When LFS is enabled on an interface, syslog messages are generated when the link goes up or down, or when the TX or RX fiber is removed from one or both sides of the link that has LFS enabled.

You can view the status of an LFS-enabled link using the **show interface** command.

The **no** form of the command disables the Link Fault Signaling (LFS).

Examples

The following example enables LFS.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# link-fault-signal
```

link-keepalive ethernet

Enables UDLD for tagged and untagged control packets.

Syntax

link-keepalive ethernet { *unit/slot/port* } [**to** *unit/slot/port* [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**vlan** *vlan-ID*]

no link-keepalive ethernet { *unit/slot/port* } [**to** *unit/slot/port* [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**vlan** *vlan-ID*]

Command Default

UDLD is not enabled.

Parameters

ethernet *unit/slot/port*
: Specifies the Ethernet interface on which to enable UDLD.

to *unit/slot/port*
: Specifies a range of Ethernet interfaces on which to enable UDLD.

vlan *vlan-ID*
: Specifies the ID of the VLAN that the UDLD control packets can contain.

Modes

Global configuration mode

Usage Guidelines

UDLD is supported only on Ethernet ports.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

If you are specifying a VLAN ID, make sure that the VLAN ID is configured. A VLAN is specified when UDLD is configured. The port belongs to the configured VLAN as a tagged member. All the devices across the UDLD link are in the same VLAN. UDLD can be enabled on only one VLAN for a tagged port.

You must configure the same VLANs that will be used for UDLD on all devices across the network; otherwise, the UDLD link cannot be maintained.

You can specify a list of Ethernet ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The **no** form of the command disables UDLD for tagged and untagged control packets.

Examples

The following example shows how to enable UDLD for untagged ports.

```
device(config)# link-keepalive ethernet 1/1/1
```

The following example shows how to configure UDLD on multiple ports.

```
device(config)# link-keepalive ethernet 1/1/1 ethernet 1/2/2
```

The following example shows how to configure UDLD on a range of ports.

```
device(config)# link-keepalive ethernet 1/1/1 to 1/1/5
```

The following example enables ports to receive and send UDLD control packets tagged with a specific VLAN ID.

```
device(config)# link-keepalive ethernet 1/1/8 vlan 22
```

link-keepalive interval

Enables the interval time that UDLD sends health-check packets.

Syntax

link-keepalive interval *time*

no link-keepalive interval *time*

Command Default

By default, ports enabled for UDLD send a health-check packet once every 500 milliseconds (ms).

Parameters

time

Specifies the time that UDLD sends the health-check packets, in milliseconds. You can specify from 1 through 60, in 100 ms increments (1 is 100 ms, 2 is 200 ms, and so on). The default is 5 (500 ms).

Modes

Global configuration mode

Usage Guidelines

A low UDLD link-keepalive interval is not recommended because low UDLD link-keepalive intervals are more sensitive and prone to flaps.

The **no** form of the command resets the interval to the default value.

Examples

The following example shows the UDLD interval configuration.

```
device(config)# link-keepalive interval 4
```

link-keepalive retries

Configures the maximum number of keep-alive attempts a port waits to receive a health-check reply packet from the port at the other end of the link.

Syntax

link-keepalive retries *number*

no link-keepalive retries *number*

Command Default

The default value is 7.

Parameters

number

Specifies the number of keep-alive retries to receive a health-check reply packet. The valid range is from 3 through 64.

Modes

Global configuration mode

Usage Guidelines

By default, a port waits one second to receive a health-check reply packet from the port at the other end of the link. If the port does not receive a reply, the port tries six more times by sending up to six more health-check packets. If the port still does not receive a reply after the maximum number of retries, the port goes down.

The **no** form of the command changes the number of retries to the default value.

Examples

The following example shows how to configure 10 retries as the maximum number of keep-alive attempts a port waits to receive a health-check reply packet.

```
device(config)# link-keepalive retries 10
```

linkdampen

Configures link dampening monitoring and alarms for an interface

Syntax

linkdampen { **interval** *interval_value* **ethernet** *unit* / *slot* / *port* }

no linkdampen { **interval** *interval_value* **ethernet** *unit* / *slot* / *port* }

Command Default

By default, link dampening monitoring and alarms are not enabled.

Parameters

interval*interval_value*

Defines the sampling period for link flaps and related state changes on the interface. The sampling period is measured in 250 millisecond increments. The *interval_value* can be configured as a value from 1 through 4, where 4 is equal to 4 X 250 ms, or 1 second.

ethernet*unit/slot/port*

Interface for which link dampening alarms are to be sent.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables link dampening. Sampling ends on the interface, and alarms are no longer sent.

Link dampening may cause momentary traffic loss, convergence issues, and other side effects and should be used only when required.

Link dampening can be applied to any port, including stacking and data ports.

When the **linkdampen** command is applied to any port in a LAG interface, the configuration is applied to all ports on the LAG.

The recommended sampling interval is 1 second (that is, an interval value of 4).

The **linkdampen** command can coexist with **link-error-disable** configuration on the same port.

Examples

The following example configures port 1/1/1 to be monitored for link flaps and for alarms to be sent every 250 milliseconds. Alarms are sent to the user or administrator through syslog and **show interfaces ethernet***unit/slot/port* command output.

```
device# configure terminal
device(config)# linkdampen interval 1 ethernet 1/1/1
***CAUTION Link-Dampening may cause momentary traffic loss,
may cause status convergence issues and other side effects.
Use Link-Dampening only when required.
Recommended usage Link-Dampening interval 4 - 1 second.

device(config)# show interfaces ethernet 1/1/1
GigabitEthernet1/1/1 is up, line protocol is up
  Port up for 8 minute(s) 40 second(s)
  Hardware is GigabitEthernet, address is 609c.9ffe.03cc (bia 609c.9ffe.03cc)
  Configured speed auto, actual 1Gbit, configured duplex fdx, actual fdx
  Configured mdi mode AUTO, actual MDIX
  Member of L2 VLAN ID 1, port is untagged, port state is FORWARDING
  BPDU guard is Disabled, ROOT protect is Disabled, Designated protect is Disabled
  Link Error Dampening is Disabled
  STP configured to ON, priority is level0, mac-learning is enabled
  Openflow is Disabled, Openflow Hybrid mode is Disabled,  Flow Control is config enabled, oper
enabled, negotiation disabled
  Mirror disabled, Monitor disabled
  Mac-notification is disabled
  Link Micro Flap Dampening is enabled   <--- Link dampening enabled on Ethernet port 1/1/1
  Damping Interval:250 msecs  Total Microflaps:0  <--- No microflaps during sampling period
  Not member of any active trunks
  Not member of any configured trunks
  No port name
  IPG MII 0 bits-time, IPG GMII 0 bits-time
  MTU 1500 bytes, encapsulation ethernet
  MMU Mode is Store-and-forward
  300 second input rate: 967999344 bits/sec, 202341 packets/sec, 99.85% utilization
  300 second output rate: 967999352 bits/sec, 202341 packets/sec, 99.85% utilization
  105261644 packets input, 62946463112 bytes, 0 no buffer
  Received 105261643 broadcasts, 0 multicasts, 0 unicasts
  0 input errors, 0 CRC, 0 frame, 0 ignored
  0 runts, 0 giants
  105261789 packets output, 62946549822 bytes, 0 underruns
  Transmitted 105261788 broadcasts, 0 multicasts, 0 unicasts
  0 output errors, 0 collisions
  Relay Agent Information option: Disabled
  Protected: No
  MAC Port Security: Disabled

 This port is not being monitored for queue drops
Egress queues:
Queue counters      Queued packets    Dropped Packets
         0           105267070            1168968
         1                   0                  0
         2                   0                  0
         3                   0                  0
         4                   0                  0
         5                  23                  0
         6                   0                  0
         7                   0                  0
```

History

Release version	Command history
08.0.90	This command was introduced for all ICX devices (brought forward from patch 08.0.70c).

link-oam

Enables the EFM-OAM protocol and enters EFM-OAM protocol configuration mode.

Syntax

link-oam

no link-oam

Command Default

The EFM-OAM protocol is not enabled.

Modes

Global configuration mode

Usage Guidelines

his command is not supported for ICX 7850 devices.

The **no** form of the command removes all the EFM-OAM configurations.

Examples

The following example enables EFM-OAM protocol configuration mode.

```
device# configure terminal
device(config)# link-oam
device(config-link-oam)#
```

History

Release version	Command history
08.0.30	This command was introduced.

lldp advertise link-aggregation

Advertises link-aggregation information.

Syntax

lldp advertise link-aggregation ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise link-aggregation ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] ...] }

Command Default

Link-aggregation information is automatically advertised when Link Layer Discovery Protocol (LLDP) is enabled on a global basis.

Parameters

ports
: Advertises link-aggregation information for the specified ports.

all
: Advertises link-aggregation information for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises link-aggregation information for a specified Ethernet port.

to *unit/slot/port*
: Advertises link-aggregation information for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The devices advertise link-aggregation information about standard link aggregation (LACP) as well as static Link Aggregation (LAG) configuration.

The link-aggregation time, length, value (TLV) indicates the following:

- Whether the link is capable of being aggregated
- Whether the link is currently aggregated

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the link-aggregation advertisement.

Examples

The following example enables advertisement of link-aggregation information for a specific Ethernet port.

```
device(config)# lldp advertise link-aggregation ports ethernet 1/1/1
```

lldp advertise mac-phy-config-status

Advertises the MAC/PHY configuration and status.

Syntax

lldp advertise mac-phy-config-status ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise mac-phy-config-status ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

The MAC/PHY configuration and status are automatically advertised when Link Layer Discovery Protocol (LLDP) is enabled on a global basis.

Parameters

ports
: Advertises MAC/PHY configuration and status for the specified ports.

all
: Advertises MAC/PHY configuration and status for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises link-aggregation information for a specified Ethernet port.

to *unit/slot/port*
: Advertises link-aggregation information for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The MAC and PHY configuration and status of time, length, and value (TLV) includes the following information:

- Auto-negotiation capability and status.
- Speed and duplex mode.
- Flow control capabilities for auto-negotiation.
- Maximum port speed advertisement.
- If applicable, whether the preceding settings are the result of auto-negotiation during link initiation or a manual set override action.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the MAC/PHY advertisement.

Examples

The following example enables the advertisement of MAC/PHY configuration and status for a specific Ethernet port.

```
device(config)# lldp advertise mac-phy-config-status ports ethernet 1/1/1
```

lldp advertise management-address

Advertises a management address.

Syntax

lldp advertise management-address { **ipv4** *ipv4-address* | **ipv6** *ipv6-address* } { **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] } }

no lldp advertise management-address { **ipv4** *ipv4-address* | **ipv6** *ipv6-address* } { **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] } }

Command Default

Management address advertising has two modes: default and explicitly configured.

Parameters

ipv4 *ipv4-address*
: Specifies an IPv4 management address to advertise.

ipv6 *ipv6-address*
: Specifies an IPv6 management address to advertise.

ports
: Advertises the configured management address for the specified ports.

all
: Advertises the configured management address for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises link-aggregation information for a specified Ethernet port.

to *unit/slot/port*
: Advertises link-aggregation information for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The default mode is used when no addresses are configured to be advertised for a given port. If no management address is explicitly configured to be advertised, the device uses the first available IPv4 address and the first available IPv6 address (so it may advertise IPv4, IPv6 or both). If any addresses are configured to be advertised for a given port, then only those addresses are advertised. If no IP address is configured, the port's current MAC address will be advertised.

If a management address is not explicitly configured to be advertised, the device uses the first available IPv4 address and the first available IPv6 address. A Layer 3 switch selects the first available address of each type from those configured on the following types of interfaces, in the following order of preference:

- Physical port on which LLDP will be transmitting the packet

- Virtual router interface (VE) on a VLAN that the port is a member of
- Dedicated management port
- Loopback interface
- Virtual router interface (VE) on any other VLAN
- Other physical port
- Other interface

For IPv6 addresses, link-local and anycast addresses are excluded from these searches.

If no IP address is configured on any of the listed interface types, the port's current MAC address is advertised.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command stops the advertisement of the management interface IP address.

Examples

The following example advertises an IPv4 management address.

```
device(config)# lldp advertise management-address ipv4 10.157.2.1 ports ethernet 1/1/4
```

The following example advertises an IPv6 management address.

```
device(config)# lldp advertise management-address ipv6 2001:DB8::90 ports ethernet 1/1/7
```

lldp advertise max-frame-size

Advertises the maximum frame size capability of the port.

Syntax

lldp advertise max-frame-size ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise max-frame-size ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

The maximum frame size is automatically advertised when Link Layer Discovery Protocol (LLDP) is enabled on a global basis.

The maximum frame size is 1522 octets.

Parameters

ports
: Advertises the maximum frame size for the specified ports.

all
: Advertises the maximum frame size for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises the maximum frame size for a specific Ethernet port.

to *stack-id/slot/port*
: Advertises the maximum frame size for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The maximum frame size TLV provides the maximum 802.3 frame size capability of the port. This value is expressed in octets and includes the four-octet Frame Check Sequence (FCS). The default maximum frame size is 1522. The advertised value may change if the **aggregated-vlan** or **jumbo** command is configured.

NOTE
On 48GC modules in nonjumbo mode, the maximum size of ping packets is 1486 bytes and the maximum frame size of tagged traffic is no larger than 1581 bytes.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example enables the maximum frame size advertisement on a range of Ethernet ports.

```
device(config)# lldp advertise max-frame-size ports ethernet 1/1/4 to 1/1/12
```

lldp advertise med-capabilities

Advertises information about Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) capabilities.

Syntax

lldp advertise med-capabilities ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise med-capabilities ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

LLDP-MED information is automatically advertised when LLDP-MED is enabled.

Parameters

ports
: Advertises LLDP-MED capabilities information for the specified ports.

all
: Advertises LLDP-MED capabilities information for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises LLDP-MED capabilities information for a specific Ethernet port.

to *unit/slot/port*
: Advertises LLDP-MED capabilities information for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The LLDP-MED capabilities advertisement includes the following information:

- The supported LLDP-MED TLVs
- The device type (network connectivity device or endpoint [Class 1, 2, or 3])

NOTE
Disabling the LLDP-MED capabilities disables LLDP-MED.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example enables the advertisement of LLDP-MED capabilities information on a range of Ethernet ports.

```
device(config)# lldp advertise med-capabilities ports ethernet 1/1/1 to 1/1/6
```

lldp advertise med-power-via-mdi

Advertises endpoint IEEE 802.3af power-related information. Enables advanced power management between LLDP-MED endpoints and network connectivity devices.

Syntax

lldp advertise med-power-via-mdi ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise med-power-via-mdi ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

LLDP-MED power-via-MDI information is automatically advertised when LLDP-MED is enabled, when the port is a PoE port, and when PoE is enabled on the port.

Parameters

ports
: Advertises LLDP-MED power-via-MDI information for the specified ports.

all
: Advertises LLDP-MED power-via-MDI information for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises LLDP-MED power-via-MDI information for a specific Ethernet interface.

to *unit/slot/port*
: Advertises LLDP-MED power-via-MDI information for a range of Ethernet interfaces.

Modes

Global configuration mode

Usage Guidelines

The LLDP-MED Power-via-MDI TLV advertises an endpoint's IEEE 802.3af power-related information, including the following:

- Power type—whether the LLDP-MED device transmitting the LLPDU is a power-sourcing device or a powered device.
- Power source—The power source being utilized by a PSE or PD, for example, the primary power source, backup power source, or unknown.
- Power priority—The inline power priority level for the PSE or PD.
- Power level—The total power, in tenths of watts, required by a PD from a PSE or the total power that a PSE is capable of sourcing over a maximum length cable based on its current configuration.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example enables the advertisement of LLDP-MED power-via-MDI information for a range of Ethernet interfaces.

```
device(config)# lldp advertise med-power-via-mdi ports ethernet 1/1/1 to 1/1/5
```

lldp advertise port-description

Identifies the port from which the Link Layer Discovery Protocol (LLDP) agent transmitted the advertisement.

Syntax

lldp advertise port-description ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise port-description ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

The port description is automatically advertised when LLDP is enabled on a global basis.

Parameters

ports
Advertises the port description for the specified ports.

all
Advertises the port description for all LLDP-capable ports.

ethernet *unit/slot/port*
Advertises the port description for a specific Ethernet port.

to *unit/slot/port*
Advertises the port description for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The port description is taken from the ifDescr MIB object from MIB-II.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example enables the advertisement of the port description on a range of Ethernet ports.

```
device(config)# lldp advertise port-description ports ethernet 1/1/4 to 1/1/9
```

lldp advertise port-id-subtype

Specifies the Link Layer Discovery Protocol (LLDP) port ID subtype information to advertise as the port ID.

Syntax

lldp advertise port-id-subtype *num* **ports** {**all**| [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise port-id-subtype *num* **ports** {**all**| [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

By default, the port ID subtype to advertise is set to 3.

Parameters

num

Specifies the port ID subtype to advertise. The subtype determines the specific information that is advertised as the port ID.

1

Causes interface alias information, taken from the ifAlias MIB object, to be advertised as the port ID.

3

Causes the MAC address to be advertised as the port ID. This is the default value.

5

Causes interface name information, taken from the ifName MIB object, to be advertised as the port ID.

7

Causes a locally assigned value (as defined by RFC 2863) to be displayed as the port ID. RUCKUS devices display information taken from the ifIndex MIB object.

ports

Specifies the LLDP-capable ports for which the LLDP port ID subtype is to be advertised.

all

Causes the advertisement of the port ID subtype for all LLDP-capable ports on the device.

ethernet *unitslot/port*

Causes the advertisement of the port ID subtype for a specific Ethernet port. When immediatly followed by the **to** option, this option specifies the first port in a range of Ethernet ports.

to *unit/slot/port*

Causes the advertisement of the port ID subtype for a range of Ethernet ports and specifies the last port in the range.

NOTE

You can specify the advertisement of an LLDP port ID subtype for a range of Ethernet ports (for example, ethernet 1/1/1 to ethernet 1/1/4), or for a list of Ethernet ports (for example, ethernet 1/2/1 ethernet 1/2/2), or you can combine a range with a list (for example, ethernet 1/1/1 to ethernet 1/1/4 ethernet 1/1/1 ethernet 1/1/2).

Modes

Global configuration mode

Usage Guidelines

The LLDP port ID subtype advertises previously configured information. To ensure that the physical location of a port is available for advertisement when the port ID subtype to advertise is set to 1, 5, or 7, the port location must first be configured by using the **lldp med location-id civic-address**, **lldp med location-id coordinate-based**, or **lldp med location-id ecs-elin** command.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command restores the port ID subtype advertised to the default value for specific ports.

Examples

The following example shows how to advertise the interface alias (port ID subtype 1) as the port ID for two individual ports (1/2/1 and 1/2/2) and for a range of ports (1/1/1 to 1/1/4).

```
device(config)# lldp advertise port-id-subtype 1 ports ethernet 1/2/1 ethernet 1/2/2 ethernet 1/1/1 to
1/1/4
```

History

Release version	Command history
08.0.50	This command was introduced.

lldp advertise port-vlan-id

Advertises the port VLAN identifier (PVID) that is associated with untagged or priority-tagged frames.

Syntax

lldp advertise port-vlan-id ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise port-vlan-id ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

The port VLAN ID is automatically advertised when Link Layer Discovery Protocol (LLDP) is enabled on a global basis.

Parameters

ports
: Advertises the port VLAN ID for the specified ports.

all
: Advertises the port VLAN ID for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises the port VLAN ID for a specific Ethernet port.

to *unit/slot/port*
: Advertises the port VLAN ID for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example enables the advertisement of the port VLAN ID on a range of ports.

```
device(config)# lldp advertise port-vlan-id ports ethernet 1/1/2 to 1/1/5
```

lldp advertise power-via-mdi

Advertises general information about Power over Ethernet (PoE) capabilities and the status of the port.

Syntax

lldp advertise power-via-mdi ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise power-via-mdi ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

Information about PoE capabilities and port status is not advertised.

Parameters

ports
: Advertises Power via Media Dependent Interface (power-via-MDI) information for the specified ports.

all
: Advertises power-via-MDI information for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises power-via-MDI information for a specific Ethernet port.

to *unit/slot/port*
: Advertises power-via-MDI information for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The power-via-MDI information includes the following:

- PoE capability (supported or not supported)
- PoE status (enabled or disabled)
- Power Sourcing Equipment (PSE) power pair—Indicates which pair of wires is in use and whether the pair selection can be controlled. The RUCKUS implementation always uses pair A and cannot be controlled.
- Power class—Indicates the range of power that the connected powered device has negotiated or requested.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example advertises the power-via-MDI information on a range of ports.

```
device(config)# lldp advertise power-via-mdi ports ethernet 1/1/1 to 1/1/10
```

lldp advertise system-capabilities

Advertises the primary functions of the device and indicates whether these primary functions are enabled.

Syntax

lldp advertise system-capabilitiesports{**all**| [**ethernet***unit/slot/port*[**to***unit/slot/port*]...]}

no lldp advertise system-capabilitiesports{**all**| [**ethernet***unit/slot/port*[**to***unit/slot/port*]...]}

Command Default

The system capabilities are automatically advertised when Link Layer Discovery Protocol (LLDP) is enabled on a global basis.

Parameters

ports
: Advertises the system capabilities for the specified ports.

all
: Advertises the system capabilities for all LLDP-capable ports.

ethernet*unitslot/port*
: Advertises the system capabilities for the specified Ethernet port.

to*unit/slot/port*
: Advertises the system capabilities for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The enabled capabilities are the same as the available capabilities, except that if the global route-only feature is turned on, the bridge capability is not included, since no bridging occurs.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example advertises the system capabilities information on a range of ports.

```
device# configure terminal
device(config)# lldp advertise system-capabilities ports ethernet 1/1/1 to 1/1/10
```

lldp advertise system-description

Advertises information such as the product name or model number, the version of the system hardware, the software operating system level, and the networking software version.

Syntax

lldp advertise system-description ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise system-description ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

The system description is not advertised.

Parameters

ports
: Advertises the system information for the specified ports.

all
: Advertises the system information for all Link Layer Discovery Protocol (LLDP) capable ports.

ethernet *unitslot/port*
: Advertises the system information for a specific Ethernet port.

to *unit/slot/port*
: Advertises the system information for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The system description is the network entity, which can include information such as the product name or model number, the version of the system hardware, the software operating system level, and the networking software version. The information corresponds to the sysDescr MIB object in MIB-II.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example advertises the system description information.

```
device(config)# lldp advertise system-description ports ethernet 1/1/1 to 1/1/5
```

lldp advertise system-name

Advertises the name assigned to the system.

Syntax

lldp advertise system-name ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp advertise system-name ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

The system name is automatically advertised when Link Layer Discovery Protocol (LLDP) is enabled on a global basis.

Parameters

ports
: Advertises the system name for the specified ports.

all
: Advertises the system name for all LLDP-capable ports.

ethernet *unit/slot/port*
: Advertises the system name for a specific Ethernet port.

to *unit/slot/port*
: Advertises the system name for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

The system name is the name that is administratively assigned to the system and is taken from the sysName MIB object in MIB-II. The sysName MIB object corresponds to the name defined with the CLI command **hostname**.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the advertisement.

Examples

The following example advertises the system name information.

```
device(config)# lldp advertise system-name ports ethernet 1/1/1 to 1/1/0
```

lldp enable ports

Enables the receipt and transmission of Link Layer Discovery Protocol (LLDP) packets on ports.

Syntax

lldp enable ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp enable ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

When LLDP is enabled on a global basis, by default, each port on a RUCKUS device is capable of transmitting and receiving LLDP packets.

Parameters

all
Enables LLDP for all LLDP-capable ports.

ethernet *unit/slot/port*
Enables LLDP for a specifc Ethernet port.

to *unit/slot/port*
Enables LLDP for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

When a port is configured to both receive and transmit LLDP packets and the MED capabilities TLV is enabled, LLDP-MED is enabled as well. LLDP-MED is not enabled if the operating mode is set to receive only or transmit only.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables the receipt and transmission of LLDP packets on the specified ports.

Examples

The following example enables LLDP on one port.

```
device(config)# lldp enable ports ethernet 1/1/1
```

lldp enable receive

Changes the Link Layer Discovery Protocol (LLDP) operating mode of specified ports from receive-and-transmit mode to receive-only mode.

Syntax

lldp enable receive ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp enable receive ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] ...] }

Command Default

When LLDP is enabled on a global basis, each port on the device is capable of transmitting and receiving LLDP packets.

Parameters

ports
: Changes the LLDP operating mode to receive-only mode for the specified ports.

all
: Changes the LLDP operating mode to receive-only mode for all LLDP-capable ports.

ethernet *unit/slot/port*
: Changes the LLDP operating mode to receive-only mode for a specific Ethernet port.

to *unit/slot/port*
: Changes the LLDP operating mode to receive-only mode for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

To change the LLDP operating mode to transmit-only mode, disable the receive mode using the **no lldp enable transmit** command.

NOTE
LLDP-MED is not enabled when you enable the receive-only operating mode. To enable LLDP-MED, you must configure the port to both receive and transmit LLDP packets.

NOTE
To change a port's LLDP operating mode from transmit-only to receive-only, first disable the transmit-only mode, and then enable the receive-only mode. If you do not disable transmit-only mode, you will configure the port to both receive and transmit LLDP packets.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command changes the LLDP operating mode to transmit-only mode if the device is in both transmit and receive mode, and it disables the LLDP receive-only operating mode if receive-only mode was enabled.

Examples

The following example changes the LLDP operating mode of three ports to receive-only mode.

```
device(config)# lldp enable receive ports ethernet 1/1/1 ethernet 1/1/5 ethernet 1/1/7
```

lldp enable snmp med-topo-change-notifications

Enables SNMP notifications and syslog messages for LLDP-MED topology changes.

Syntax

lldp enable snmp med-topo-change-notifications ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp enable snmp med-topo-change-notifications ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

SNMP notifications and corresponding syslog messages are disabled.

Parameters

ports
: Enables LLDP-MED SNMP notifications and syslog messages for ports.

all
: Enables LLDP-MED SNMP notifications and syslog messages for all LLDP-capable ports.

ethernet *unit/slot/port*
: Enables LLDP-MED SNMP notifications and syslog messages for a specific Ethernet port.

to *unit/slot/port*
: Enables LLDP-MED SNMP notifications and syslog messages for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

When you enable LLDP-MED SNMP notifications, corresponding syslog messages are enabled as well. When you enable LLDP-MED SNMP notifications, the device sends traps and syslog messages when an LLDP-MED endpoint neighbor entry is added or removed.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables LLDP-MED SNMP notifications and syslog messages.

Examples

The following example enables LLDP-MED SNMP notifications and syslog messages for a range of ports.

```
device(config)# lldp enable snmp med-topo-change-notifications ports ethernet 1/1/4 to 1/1/6
```

lldp enable snmp notifications

Enables LLDP SNMP notifications and syslog messages.

Syntax

lldp enable snmp notifications ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp enable snmp notifications ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

LLDP SNMP notifications and corresponding syslog messages are disabled.

By default, the device will send no more than one SNMP notification and Syslog message within a five second period.

Parameters

ports
Enables LLDP SNMP notifications and syslog messages for ports.

all
Enables LLDP SNMP notifications and syslog messages for all LLDP-capable ports.

ethernet *unit/slot/port*
Enables LLDP SNMP notifications and syslog messages for a specific Ethernet port.

to *unit/slot/port*
Enables LLDP SNMP notifications and syslog messages for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

When you enable LLDP SNMP notifications, the device sends traps and corresponding syslog messages whenever there is a change in the LLDP data received from neighboring devices.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command disables LLDP SNMP notifications and syslog messages.

Examples

The following example enables LLDP SNMP notifications and syslog messages for a range of ports.

```
device(config)# lldp enable snmp notifications ports ethernet 1/1/1 to 1/1/6
```

lldp enable transmit

Changes the Link Layer Discovery Protocol (LLDP) operating mode to transmit-only mode.

Syntax

lldp enable transmit ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp enable transmit ports { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

When LLDP is enabled on a global basis, each port on the device is capable of transmitting and receiving LLDP packets.

Parameters

ports
: Changes the LLDP operating mode to transmit-only mode for ports.

all
: Changes the LLDP operating mode to transmit-only mode for all LLDP-capable ports.

ethernet *unit/slot/port*
: Changes the LLDP operating mode to transmit-only mode for the specified Ethernet interface.

to *unit/slot/port*
: Changes the LLDP operating mode to transmit-only mode for a range of Ethernet interfaces.

Modes

Global configuration mode

Usage Guidelines

NOTE
To change a port's LLDP operating mode from receive- only to transmit-only, first disable receive-only mode, and then enable transmit-only mode. If you do not disable receive-only mode, you will configure the port to both receive and transmit LLDP packets.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command changes the LLDP operating mode to receive-only mode if the device is in both transmit and receive mode, and it disables the LLDP transmit-only operating mode if transmit-only mode was enabled.

Examples

The following example sets the LLDP operating mode to transmit-only mode.

```
device(config)# no lldp enable receive ports ethernet 1/1/1 ethernet 1/1/8
device(config)# lldp enable transmit ports ethernet 1/1/1 ethernet 1/1/8
```

lldp max-neighbors-per-port

Specifies the maximum number of Link Layer Discovery Protocol (LLDP) neighbors per port.

Syntax

lldp max-neighbors-per-port *value*

no lldp max-neighbors-per-port

Command Default

The default number of LLDP neighbors per port is 4.

Parameters

value

Specifies the number of LLDP neighbors for which LLDP data is retained for each port. The value can range from 1 through 64. The default value is 4.

Modes

Global configuration mode

Usage Guidelines

You can use the **show lldp** command to view the current configuration.

The **no** form of the command removes the configured value and restores the default value of 4.

Examples

The following example sets the number of LLDP neighbors per port to 6.

```
device(config)# lldp max-neighbors-per-port 6
```

lldp max-total-neighbors

Specifies the maximum number of Link Layer Discovery Protocol (LLDP) neighbors for which LLDP data is retained for the entire system.

Syntax

lldp max-total-neighbors *value*

no lldp max-total-neighbors

Command Default

The default number of LLDP neighbors per device is 392.

Parameters

value

Specifies the number of LLDP neighbors per device. The value can range from 16 through 8192. The default value is 392.

Modes

Global configuration mode

Usage Guidelines

You can use the **show lldp** command to view the current configuration.

The **no** form of the command removes the configured value and restores the default value of 392 LLDP neighbors.

Examples

The following example sets the number of LLDP neighbors per device to 100.

```
device(config)# lldp max-total-neighbors 100
```

lldp med fast-start-repeat-count

Configures the Link Layer Discovery Protocol Media Endpoint Device (LLDP-MED) fast-start transmit count.

Syntax

lldp med fast-start-repeat-count *value*

no lldp med fast-start-repeat-count

Command Default

The device sends three packets at 1-second intervals.

Parameters

value

Specifies the number of LLDP packets that are sent during the LLDP-MED fast-start period. The value can range from 1 through 10. The default value is 3.

Modes

Global configuration mode

Usage Guidelines

The LLDP-MED fast-start repeat count specifies the number of LLDP packets that are sent during the LLDP-MED fast-start period.

The fast-start feature enables a network connectivity device to initially advertise itself at a faster rate for a limited time when an LLDP-MED endpoint has been newly detected or has newly connected to the network. This feature is important within a VoIP network, for example, where rapid availability is crucial for applications such as emergency call service location (E911). The fast-start timer starts when a network connectivity device receives the first LLDP frame from a newly detected endpoint.

NOTE
The LLDP-MED fast-start mechanism is intended to run only on links between network connectivity devices and endpoint devices. It does not apply to links between LAN infrastructure elements, including between network connectivity devices or to other types of links.

The **no** form of the command removes the configured value and restores the default value of 3 packets per second.

Examples

The following example sets the LLDP-MED fast-start transmit count to 6.

```
device(config)# lldp med fast-start-repeat-count 6
```

lldp med location-id civic-address

Configures a civic-address-based location for Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED).

Syntax

lldp med location-id civic-address refers-to *reference* **country** *country-code* [**elem** *CA-type value* [**elem** *CA-type value*] ...] **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp med location-id civic-address refers-to *reference* **country** *country-code* [**elem** *CA-type value* [**elem** *CA-type value*] ...] **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

An LLDP-MED civic address is not configured.

Parameters

refers-to *reference*

Specifies the location that the entry refers to. Specify one of the following: **client**, **dhcp-server**, or **network-element**.

NOTE
The **dhcp-server** or **network-element** keywords should be used only if it is known that the endpoint is in close physical proximity to the DHCP server or network element.

country *country-code*

Specifies a two-letter ISO 3166 country code in capital ASCII letters as follows:

- **CA** (Canada)
- **DE** (Germany)
- **JP** (Japan)
- **KR** (Korea)
- **US** (United States)

elem *CA-type*

Specifies the civic address element. This a value from 0 to 255 that describes the civic address element. Refer to the usage guidelines.

value

Specifies the actual value of the element CA type.

ethernet *unit/slot/port*

Specifies the Ethernet port.

to *unit/slot/port*

Specifies a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

If the value of an element contains one or more spaces, use double quotation marks (") at the beginning and end of the string. For example, **elem 3 "Santa Clara"**.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command removes the configuration.

TABLE 11 Elements Used With a Civic Address

Civic address (CA) type	Description	Acceptable values / examples
0	Language	The ISO 639 language code used for presenting the address information.
1	National subdivisions (state, canton, region, province, or prefecture)	Examples: Canada - Province Germany - State Japan - Metropolis Korea - Province United States - State
2	County, parish, gun (JP), or district (IN)	Examples: Canada - County Germany - County Japan - City or rural area Korea - County United States - County
3	City, township, or shi (JP)	Examples: Canada - City or town Germany - City Japan - Ward or village Korea - City or village United States - City or town
4	City division, borough, city district, ward, or chou (JP)	Examples: Canada - N/A Germany - District Japan - Town Korea - Urban district United States - N/A

TABLE 11 Elements Used With a Civic Address (continued)

Civic address (CA) type	Description	Acceptable values / examples
5	Neighborhood or block	Examples: Canada - N/A Germany - N/A Japan - City district Korea - Neighborhood United States - N/A
6	Street	Examples: Canada - Street Germany - Street Japan - Block Korea - Street United States - Street
16	Leading street direction	N (north), E (east), S (south), W (west), NE, NW, SE, SW
17	Trailing street suffix	N (north), E (east), S (south), W (west), NE, NW, SE, SW
18	Street suffix	Acceptable values for the United States are listed in the United States Postal Service Publication 28 [18], Appendix C. Example: Ave, Place
19	House number	The house number (street address) Example: 1234
20	House number suffix	A modifier to the house number. It does not include parts of the house number. Example: A, 1/2
21	Landmark or vanity address	A string name for a location. It conveys a common local designation of a structure, a group of buildings, or a place that helps to locate the place. Example: UC Berkeley
22	Additional location information	An unstructured string name that conveys additional information about the location. Example: west wing

TABLE 11 Elements Used With a Civic Address (continued)

Civic address (CA) type	Description	Acceptable values / examples
23	Name (residence and office occupant)	Identifies the person or organization associated with the address. Example: Textures Beauty Salon
24	Postal / zip code	The valid postal / zip code for the address. Example: 95054-1234
25	Building (structure)	The name of a single building if the street address includes more than one building or if the building name is helpful in identifying the location. Example: Law Library
26	Unit (apartment, suite)	The name or number of a part of a structure where there are separate administrative units, owners, or tenants, such as separate companies or families who occupy that structure. Common examples include suite or apartment designations. Example: Apt 27
27	Floor	Example: 4
28	Room number	The smallest identifiable subdivision of a structure. Example: 7A
29	Place type	The type of place described by the civic coordinates. For example, a home, office, street, or other public space. Example: Office
30	Postal community name	When the postal community name is defined, the civic community name (typically CA type 3) is replaced by this value. Example: Alviso
31	Post office box (P.O. box)	When a P.O. box is defined, the street address components (CA types 6, 16, 17, 18, 19, and 20) are replaced with this value. Example: P.O. Box 1234

TABLE 11 Elements Used With a Civic Address (continued)

Civic address (CA) type	Description	Acceptable values / examples
32	Additional code	An additional country-specific code that identifies the location. For example, for Japan, this is the Japan Industry Standard (JIS) address code. The JIS address code provides a unique address inside of Japan, down to the level of indicating the floor of the building.
128	Script	The script (from ISO 15924 [14]) used to present the address information. Example: Latn **NOTE** If not manually configured, the system assigns the default value **Latn**.
255	Reserved	

The **no** form of the command removes the LLDP-MED civic address.

Examples

The following example configures a civic-address-based location.

```
device(config)# lldp med location-id civic-address refers-to client country US elem 1 CA elem 3 "Santa
Clara" elem 6 "4980 Great America Pkwy" elem 24 95054 elem 27 5 elem 28 551 elem 29 office elem 23
"John Doe"
```

lldp med location-id coordinate-based

Configures a coordinate-based location for an endpoint device.

Syntax

lldp med location-id coordinate-based latitude *degrees* **resolution** *bits* **longitude** *degrees* **resolution** *bits* **altitude** { **floors** *number* **resolution** *bits* | **meters** *number* **resolution** *bits* } *datum* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp med location-id coordinate-based latitude *degrees* **resolution** *bits* **longitude** *degrees* **resolution** *bits* **altitude** { **floors** *number* **resolution** *bits* | **meters** *number* **resolution** *bits* } *datum* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

A coordinate-based location for an endpoint device is not configured.

Parameters

latitude *degrees*

Specifies the angular distance north or south from the earth equator, measured through 90 degrees. Positive numbers indicate a location north of the equator and negative numbers indicate a location south of the equator.

resolution *bits*

Specifies the precision of the value given for latitude. A smaller value increases the area within which the device is located. For latitude, the value can range from 1 to 34.

longitude *degrees*

Specifies the angular distance from the intersection of the zero meridian. Positive values indicate a location east of the prime meridian and negative numbers indicate a location west of the prime meridian.

resolution *bits*

Specifies the precision of the value given for longitude. A smaller value increases the area within which the device is located. For longitude resolution, enter a number between 1 and 34.

altitude

Specifies the vertical elevation of a building above the ground.

floors *number*

Specifies the vertical elevation of a building above the ground, where 0 represents the floor level associated with the ground level at the main entrance and larger values represent floors that are above (higher in altitude) floors with lower values. Subfloors can be represented by noninteger values.

resolution *bits*

Specifies the precision of the value given for altitude. A smaller value increases the area within which the device is located. For floor resolution, enter the value 0 if the floor is unknown or 30 if a valid floor is being specified.

meters *number*

Specifies the vertical elevation, in meters, as opposed to floors.

resolution *bits*

Specifies the precision of the value given for altitude. A smaller value increases the area within which the device is located. For meter resolution, enter a value from 0 to 30.

datum

Specifies the map used as the basis for calculating the location. The value can be one of the following:

wgs84

World Geodesic System 1984, CRS Code 4327, Prime Meridian Name: Greenwich.

nad83-navd88

North American Datum 1983, CRS Code 4269, Prime Meridian Name: Greenwich. The associated vertical datum is the North American Vertical Datum of 1988 (NAVD88). Use this value when referencing locations on land. If land is near tidal water, use **nad83-mllw**.

nad83-mllw

North American Datum 1983, CRS Code 4269, Prime Meridian Name: Greenwich. The associated vertical datum is mean lower low water (MLLW). Use this value when referencing locations on water, sea, or ocean.

ports

Introduces the set of Ethernet interfaces to be included in the configuration.

all

Specifies that all Ethernet ports included in the configuration.

ethernet *unit/slot/port*

Specifies an Ethernet port.

to *unit/slot/port*

Specifies a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command removes a coordinate-based location for an Endpoint device.

Examples

The following example configures a coordinate-based location.

```
device(config)# lldp med location-id coordinate-based latitude -78.303 resolution 20 longitude 34.27
resolution 18 altitude meters 50 resolution 16 wgs84 ports all
```

lldp med location-id ecs-elin

Configures an Emergency Call Service (ECS) based location for Link Layer Discovery Protocol Media Endpoint Device (LLDP-MED).

Syntax

lldp med location-id ecs-elin *numeric-string* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp med location-id ecs-elin *numeric-string* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Parameters

numeric-string
: Specifies the Emergency Location Identification Number (ELIN) from the North America Numbering Plan format, supplied to the Public Safety Answering Point (PSAP) for ECS purposes. The value can range from 10 to 25 digits in length.

ports
: Configures an ECS-based location for ports.

all
: Configures an ECS-based location for all LLDP-capable ports.

ethernet *unit/slot/port*
: Configures an ECS-based location for a specific Ethernet port.

to *unit/slot/port*
: Configures an ECS-based location for a range of Ethernet ports.

Modes

Global configuration mode

Usage Guidelines

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command removes the configured ECS-based location.

Examples

The following example configures an ECS-based location for LLDP-MED.

```
device(config)# lldp med location-id ecs-elin 4082071700 ports ethernet 1/2/1 to 1/2/4
```

lldp med network-policy application

Defines an Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) network policy for an endpoint.

Syntax

lldp med network-policy application *application-type* **tagged vlan** *vlan-id* **priority** *priority-value* **dscp** *dscp-value* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp med network-policy application *application-type* **tagged vlan** *vlan-id* **priority** *priority-value* **dscp** *dscp-value* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

lldp med network-policy application *application-type* **untagged dscp** *dscp-value* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp med network-policy application *application-type* **untagged dscp** *dscp-value* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

lldp med network-policy application *application-type* **priority-tagged priority** *priority-value* **dscp** *dscp-value* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

no lldp med network-policy application *application-type* **priority-tagged priority** *priority-value* **dscp** *dscp-value* **ports** { **all** | [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] }

Command Default

An LLDP-MED network policy is not defined.

Parameters

application-type

Configures the primary function of the applications defined by this network policy. The application type can be one of the following:

guest-voice

Limited voice service for guest users and visitors with their own IP telephony handsets or similar devices that support interactive voice services.

guest-voice-signaling

Limited voice service for use in network topologies that require a different policy for guest voice signaling than for guest voice media.

softphone-voice

Softphone voice service for use with multimedia applications that work in association with VoIP technology, enabling phone calls direct from a PC or laptop. Softphones do not usually support multiple VLANs and are typically configured to use an untagged VLAN or a single tagged data-specific VLAN. Note that when a network policy is defined for use with an untagged VLAN, the Layer 2 priority field is ignored and only the DSCP value is relevant.

streaming-video

Applies to broadcast- or multicast-based video content distribution and similar applications that support streaming video services requiring specific network policy treatment. Video applications that rely on TCP without buffering would not be an intended use of this application type.

video-conferencing
Applies to dedicated video conferencing equipment and similar devices that support real-time interactive video/audio services.

video-signaling
For use in network topologies that require a separate policy for video signaling than for video media. Note that this application type should not be advertised if all the same network policies apply as those advertised in the video conferencing policy TLV.

voice
For use by dedicated IP telephony handsets and similar devices that support interactive voice services.

voice-signaling
For use in network topologies that require a different policy for voice signaling than for voice media. Note that this application type should not be advertised if all the same network policies apply as those advertised in the voice policy TLV.

tagged vlan *vlan-id*
Specifies the tagged VLAN that the specified application type will use.

untagged
Configures the device to use an untagged frame format.

priority-tagged
Configures the device to use priority-tagged frames. In this case, the device uses the default VLAN (PVID) of the ingress port.

priority *priority-value*
Configures the Layer 2 priority value to be used for the specified application type. Enter 0 to use the default priority. Valid values are 0 through 7.

dscp *dscp-value*
Configures the Layer 3 differentiated services codepoint priority value to be used for the specified application type. Enter 0 to use the default priority. Valid values are 0 through 63.

ports
Specifies the ports.

ethernet *unit/slot/port*
Configures the network policy on the specified Ethernet interface.

to *unit/slot/port*
Configures the network policy on a range of Ethernet interfaces.

Modes

Global configuration mode

Usage Guidelines

An LLDP-MED network policy defines an endpoint VLAN configuration (VLAN type and VLAN ID) and associated Layer 2 and Layer 3 priorities that apply to a specific set of applications on a port.

NOTE
This feature applies to applications that have specific real-time network policy requirements, such as interactive voice or video services. It is not intended to run on links other than links between network connectivity devices and endpoints, and therefore does not advertise the multitude of network policies that frequently run on an aggregated link.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

The command cannot support LAG virtual interfaces. Attempting to configure them will have no effect.

The **no** form of the command removes the defined LLDP-MED network policy for an Endpoint.

Examples

The following example defines an LLDP-MED network policy for an endpoint.

```
device(config)# lldp med network-policy application voice tagged vlan 99 priority 3 dscp 22 ports
ethernet 1/1/1 to 1/1/3
```

lldp reinit-delay

Configures the minimum time between port reinitializations.

Syntax

lldp reinit-delay *seconds*

no lldp reinit-delay

Command Default

When LLDP is enabled, the default time between port reinitializations is set to 2 seconds.

Parameters

seconds

Specifies the time between port reinitializations. The value can range from 1 through 10 seconds. The default is 2 seconds.

Modes

Global configuration mode

Usage Guidelines

The LLDP re-initialization delay timer specifies the minimum number of seconds the device will wait from when LLDP is disabled on a port, until it will honor a request to re-enable LLDP on that port.

The **no** form of the command removes the configured value and restores the interval between port reinitializations to the default of 2 seconds.

Examples

The following example sets the reinitialization delay timer to 5 seconds.

```
device(config)# lldp reinit-delay 5
```

lldp snmp-notification-interval

Configures the minimum time between SNMP traps and syslog messages.

Syntax

lldp snmp-notification-interval *seconds*

no lldp snmp-notification-interval

Command Default

The default time between transmission of SNMP traps and syslog messages is 5 seconds.

Parameters

seconds

Configures the time, in seconds, between transmission of SNMP traps and syslog messages. The value can range from 5 through 3600. The default is 5.

Modes

Global configuration mode

Usage Guidelines

When SNMP notifications and syslog messages for LLDP are enabled, the device will send no more than one SNMP notification and corresponding syslog message within a 5-second period.

The **no** form of the command removes the configured value and restores the time between transmission of SNMP traps and syslog messages to the default of 5 seconds.

Examples

The following example sets the minimum time interval between traps and syslog messages to 60 seconds.

```
device(config)# lldp snmp-notification-interval 60
```

lldp tagged-packets

Enables support for tagged Link Layer Discovery Protocol (LLDP) packets.

Syntax

lldp tagged-packets process

no lldp tagged-packets [**process**]

Command Default

By default, devices do not accept tagged LLDP packets from other vendor devices.

Parameters

process

Enables processing of tagged LLDP packets.

Modes

Global configuration mode

Usage Guidelines

When support for tagged LLDP packets is enabled, the device accepts incoming LLDP tagged packets if the VLAN tag matches any of the following:

- A configured VLAN on the port
- The default VLAN for a tagged port
- The configured untagged VLAN for a dual-mode port

The **no** form of the command disables support for tagged LLDP packets.

Examples

The following example enables support for tagged LLDP packets.

```
device(config)# lldp tagged-packets process
```

lldp transmit-delay

Configures the minimum time between Link Layer Discovery Protocol (LLDP) transmissions.

Syntax

lldp transmit-delay *seconds*

no lldp transmit-delay

Command Default

When LLDP is enabled, the system automatically sets the LLDP transmit delay to 2 seconds.

Parameters

seconds

Configures the LLDP transmit delay, in seconds. The value can range from 1 through 8192. The default value is 2.

Modes

Global configuration mode

Usage Guidelines

The LLDP transmit delay must not be greater than one quarter of the LLDP transmission interval (CLI command **lldp transmit-interval**).

The LLDP transmit delay prevents an LLDP agent from transmitting a series of successive LLDP frames during a short time period, when rapid changes occur in LLDP. It also increases the probability that multiple changes, rather than a single change, will be reported in each LLDP frame.

The **no** form of the command removes the configured value and restores the default value of 2 seconds.

Examples

The following example sets the LLDP transmit delay to 7 seconds.

```
device(config)# lldp transmit-delay 7
```

lldp transmit-hold

Configures the transmit holdtime multiplier for time to live (TTL).

Syntax

lldp transmit-hold *value*

no lldp transmit-hold [*value*]

Command Default

When LLDP is enabled, the device automatically sets the holdtime multiplier for TTL to 4.

Parameters

value

Configures the transmit holdtime multiplier. The value can range from 2 to 10. The default is 4.

Modes

Global configuration mode

Usage Guidelines

The transmit holdtime multiplier for TTL is used to compute the actual TTL value used in an Link Layer Discovery Protocol (LLDP) frame. The TTL value is the length of time for which the receiving device maintains information in its MIB.

NOTE
Setting the transmit interval or transmit holdtime multiplier, or both, to inappropriate values can cause the LLDP agent to transmit LLDP PDUs with TTL values that are excessively high. This, in turn, can affect how long a receiving device retains information if it is not refreshed.

The **no** form of the command removes the configured value and restores the holdtime multiplier for TTL to the default value 4.

Examples

The following example sets the holdtime multiplier to 6.

```
device(config)# lldp transmit-hold 6
```

lldp transmit-interval

Sets the interval between regular Link Layer Discovery Protocol (LLDP) packet transmissions.

Syntax

lldp transmit-interval *seconds*

no lldp transmit-interval

Command Default

When LLDP is enabled, the transmit interval between LLDP packets is set to 30 seconds.

Parameters

seconds

Configures the time interval, in seconds, between LLDP packet transmissions. The value can range from 5 through 32768.

Modes

Global configuration mode

Usage Guidelines

Setting the transmit interval or transmit holdtime multiplier, or both, to inappropriate values can cause the LLDP agent to transmit LLDP PDUs with TTL values that are excessively high. This in turn can affect how long a receiving device retains the information if it is not refreshed.

The **no** form of the command removes the configured value and sets the time interval between LLDP packet transmissions to 30 seconds.

Examples

The following example sets the time interval between LLDP packet transmissions to 100 seconds.

```
device(config)# lldp transmit-interval 40
```

load-balance symmetric

Enables symmetric load balancing for IPv4 and IPv6 data traffic on RUCKUS FastIron devices.

Syntax

load-balance symmetric

no load-balance symmetric

Modes

Global configuration mode

Usage Guidelines

This command configuration affects selection of LAG member port after symmetric load balancing is enabled. For a bidirectional (forward and reverse direction) traffic flow, same port in the LAG and/or same next hop for ECMP is chosen.

The **no** form of the command disables symmetric load balancing in the system.

Examples

The following example enables symmetric load balancing for IPv4 and IPv6 data traffic on a device.

```
device(config)# load-balance symmetric
```

History

Release version	Command history
08.0.30b	This command was introduced.

local-as

Specifies the BGP autonomous system number (ASN) where the device resides.

Syntax

local-as *num*

no local-as *num*

Parameters

num

The local ASN. The range is from 1 through 4294967295.

Modes

BGP configuration mode

Usage Guidelines

Use the **no** form of this command to remove the ASN from the device.

ASNs in the range from 64512 through 65535 are private numbers that are not advertised to the external community.

Examples

This example assigns a separate local AS number.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 777
```

local-certificate (PKI)

Defines the URL of the local certificate.

Syntax

local-certificate { *url* }

no local-certificate { *url* }

Command Default

Parameters

url

Defines the location where local certificates are stored.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the configuration.

Examples

The following example configures the storage location for location certificates as the URL shown.

```
http://FI-PKI02.englab.ruckus.com/CertSrv/localcert.pem
```

History

Release version	Command history
08.0.70	This command was introduced.

local-identifier

Configures the local system identifier for an Internet Key Exchange version 2 (IKEv2) profile.

Syntax

local-identifier { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

no local-identifier { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

Command Default

The device IP address is used as the local identifier.

Parameters

address *ip-address*
: Specifies an address as the local system identifier.

ip-address
: Specifies an IPv4 address.

ipv6-address
: Specifies an IPv6 address.

dn *dn-name*
: Specifies a Distinguished Name (DN) as the local system identifier.

email *email-address*
: Specifies an email address as the local system identifier.

fqdn *fqdn-name*
: Specifies a fully qualified domain name (FQDN) as the local system identifier.

key-id *key-id*
: Specifies a key ID as the local system identifier.

Modes

IKEv2 profile configuration mode

Usage Guidelines

The **no** form of the command removes the specified local identifier.

Examples

The following example shows how to configure IP address 10.3.3.3 as the local system identifier for an IKEv2 profile named prof_mktg.

```
device# configure terminal
device(config)# ikev2 profile prof-mktg
device(config-ike-profile-prof-mktg)# local-identifier address 10.3.3.3
device(config-ike-profile-prof-mktg)# exit
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support was added for IPv6.

local-userdb

Creates a local user database.

Syntax

local-userdb *db-name*

no local-userdb *db-name*

Command Default

No local user databases exists.

Parameters

db-name

Configures the name of the local user database. The name can be up to 31 alphanumeric characters.

Modes

Global configuration mode

Usage Guidelines

RUCKUS supports a maximum of ten local user databases, each containing up to 50 user records. Each user record consists of a username and password.

The **no** form of the command removes a local database.

Examples

The following example shows how to configure a local user database.

```
device(config)# local-userdb userdb1
device(config-localuserdb-userdb1)#
```

log (OSPFv2)

Controls the generation of OSPFv2 logs.

Syntax

log { **adjacency** [**dr-only**] | **all** | **bad_packet** [**checksum**] | **database** | **memory** | **retransmit** }

no log { **adjacency** [**dr-only**] | **all** | **bad_packet** [**checksum**] | **database** | **memory** | **retransmit** }

Command Default

Only OSPFv2 messages indicating possible system errors are logged. Refer to the Parameters section for specific defaults.

Parameters

adjacency

Specifies the logging of essential OSPFv2 neighbor state changes. This option is disabled by default.

dr-only

Specifies the logging of essential OSPF neighbor state changes where the interface state is designated router (DR).

all

Specifies the logging of all syslog messages.

bad-packet

Specifies the logging of bad OSPFv2 packets. This option is enabled by default.

checksum

Specifies all OSPFv2 packets that have checksum errors.

database

Specifies the logging of OSPFv2 LSA-related information. This option is disabled by default.

memory

Specifies the logging of OSPFv2 memory issues. This option is enabled by default.

retransmit

Specifies the logging of OSPFv2 retransmission activities. This option is disabled by default.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

Use this command to disable or re-enable the logging of specific events related to OSPFv2. If this command is not enabled only OSPFv2 messages indicating possible system errors are logged.

For interfaces where the designated router state is not applicable, such as point-to-point and virtual links, OSPF neighbor state changes are always logged irrespective of the setting of the **dr-only** sub-option.

A limitation with the **dr-only** sub-option is that when a DR/BDR election is underway, OSPF neighbor state changes pertaining to non-DR/BDR routers are not logged. Logging resumes once a DR is elected on that network.

The **no** form of the command restores the default settings. Use the **no log all** command to return all OSPFv2 logging options to the default settings.

Examples

The following example enables the logging of all OSPFv2-related syslog events.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# log all
```

The following example enables the logging of OSPFv2 retransmission activities.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# log retransmit
```

log-status-change

Controls the generation of all OSPFv3 logs.

Syntax

log-status-change

no log-status-change

Command Default

Disabled

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Use this command to disable or re-enable the logging of events related to OSPFv3, such as neighbor state changes and database overflow conditions.

The **no** form of this command disables the logging of events.

Examples

The following example disables the logging of events.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# no log-status-change
```

The following example enables the logging of events.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# log-status-change
```

logging

Enables logging on the Router Advertisement (RA) guard policy.

Syntax

logging

no logging

Modes

RA guard policy configuration mode

Usage Guidelines

The **no** form of this command disables logging on the policy.

Logging cannot be modified if the RA guard policy is in use.

You can verify the logs for RA guard, such as RAs dropped, permitted, count for dropped packets, and reasons for the drop.

Logging increases the CPU load and for higher traffic rates, RA packets drop due to congestion if they are received at the line rate. For less load on the CPU, logging can be disabled on the RA guard policy.

Examples

The following example enables logging on an RA guard policy:

```
device(config)# ipv6 raguard policy p1
device(config-ipv6-RAG-policy p1)# logging
```

logging buffered

Enables logging of specific messages or changes the number of entries that the local syslog buffer can store.

Syntax

logging buffered { *level* | **threshold** *value* | *num-entries* }

no logging buffered { *level* | **threshold** *value* | *num-entries* }

Command Default

The number of entries that the local syslog buffer can store is 4000.

Parameters

level

Specifies the message level with one of the following values: **alerts**, **critical**, **debugging**, **emergencies**, **errors**, **informational**, **notifications**, **warnings**.

threshold *value*

Configures a threshold value for logging buffer based on which a syslog warning message is generated when the log entries exceed the specified threshold value. The threshold value is in percentage.

num-entries

Configures the number of entries that the local syslog buffer can store. The value ranges from 1 through 4000.

Modes

Global configuration mode

Usage Guidelines

The software does not log informational or debugging messages.

To change the message level, you must disable logging of specific message levels individually.

When changing the number of entries that the local syslog buffer can store, pay attention to the following considerations:

- You must save the configuration and reload the software to effect the change.
- The modified number of syslog messages remains persistent across reloads if the **logging persistence** command is configured.
- The number of persistent log messages across soft reboots is the same as the number of dynamic syslog messages.
- If you decrease the size of the buffer, the software clears the buffer before effecting any changes.
- If you increase the size of the syslog buffer, the software clears some of the older locally buffered syslog messages.

The **no** form of the command using the *level* option disables logging of the specified message level. The **no** form of the command using the *num-entries* option resets the syslog buffer size to 4000 (the default).

Examples

The following example enables the logging of debugging messages.

```
device(config)# logging buffered debugging
```

The following example sets the number of entries that the local syslog buffer can store to 1000.

```
device(config)# logging buffered 1000
```

The modified number of dynamic syslog messages getting logged is displayed in the **show logging** command output.

```
device# show logging
Syslog logging: enabled ( 0 messages dropped, 0 flushes, 0 overruns)
Buffer logging: level ACDMEINW, 9 messages logged
    level code: A=alert C=critical D=debugging M=emergency E=error
                I=informational N=notification W=warning

Static Log Buffer:
Dec 20 03:51:04:I:System: Stack unit 1   Power supply 1  is up

Dynamic Log Buffer (1000 lines):
Dec 20 03:51:35:I:Security: console login by un-authenticated console user to PRIVILEGED EXEC mode
Dec 20 03:51:04:I:System: Stack unit 1   Power supply 1  is up
```

The following example sets a threshold value for logging buffer.

```
device(config)#logging buffered threshold 50
```

When the log entries reach the specified threshold value of logging buffer, a Syslog warning message similar to the following is generated.

```
SYSLOG: <12> Apr 27 07:42:51 device Warning! Buffer reached the threshold limit of 50%
```

History

Release version	Command history
08.0.80	This command was modified to increase the default value of dynamic syslog messages being logged from 50 to 4000.
09.0.00a	This command was modified to add the **threshold** option.

logging cli-command

Enables logging of all syntactically valid CLI commands from each user session into the system log.

Syntax

logging cli-command

no logging cli-command

Command Default

Logging of CLI commands is not enabled.

Modes

Global configuration mode

Usage Guidelines

If the **logging cli-command** command is configured, all the CLI commands executed by the user are logged in the system log and are displayed in the **show logging** command output.

The **no** form of the command disables the logging of CLI commands from each user session into the system log.

Examples

The following example enables the logging of CLI commands on the device.

```
device(config)# logging cli-command
```

The following example shows the system log records which are displayed in the **show logging** command output. The system log contains the valid commands that are executed by the user.

```
device (config)# show logging
Syslog logging: enabled (0 messages dropped, 0 flushes, 5 overruns)
            Buffer logging: level ACDMEINW, 50 messages logged
            level code: A=alert C=critical D=debugging M=emergency E=error I=informational
N=notification W=warning
Dynamic Log Buffer (50 lines):
8d02h28m43s:I:CLI CMD: "ip route 0.0.0.0 0.0.0.0 10.20.64.1" by un-authenticated
user from console
8d02h28m24s:I:System: Interface ethernet 1/1/1, state up
8d02h28m22s:I:CLI CMD: "enable" by un-authenticated user from console
8d02h28m22s:I:PORT: 1/1/1 enabled by un-authenticated user from console session
8d02h28m19s:I:CLI CMD: "disable" by un-authenticated user from console
8d02h28m19s:I:PORT: 1/1/1 disabled by un-authenticated user from console session
8d02h28m16s:I:CLI CMD: "interface ethernet 1/1/1" by un-authenticated user from
console
```

logging console

Enables the real-time display of syslog messages.

Syntax

logging console

no logging console

Command Default

To view syslog messages generated by a device, you need to display the syslog buffer or the log on a syslog server used by the device.

Modes

Global configuration mode

Usage Guidelines

You can enter this command from the serial console or from a Telnet or SSH session.

You can enable the real-time display of syslog messages on the management console. When you enable this command, the software displays a syslog message on the management console when the message is generated. However, to enable the display of real-time syslog messages in Telnet or SSH sessions, you must also enable the display within the individual sessions.

The **no** form of the command disables the real-time display of syslog messages.

Examples

The following example enables the real-time display of syslog messages.

```
device(config)# logging console
```

logging enable (ACL)

Enables logging for an IPv4, IPv6, or MAC ACL.

Syntax

logging enable

no logging enable

Command Default

ACL logging is not enabled.

Modes

ACL filter configuration sub-mode

or

ACL binding configuration sub-mode

Usage Guidelines

The **no** form of the command disables ACL logging.

The **logging enable** command is used in conjunction with the keyword **log**, configured as part of an ACL filter statement, to determine which traffic and actions are logged.

From FastIron release 08.0.95, the **logging enable** command, applied at the ACL binding level, replaces the **logging-enable** command, which was applicable only at the interface configuration or ACL filter configuration level.

Examples

The following example enables logging for an IPV6, MAC, and IPv4 ACL in VLAN 222. The **show ip access-lists 136** command confirms that logging occurs in IPv4 extended ACL 136 when traffic from a particular set of IP addresses is denied. The statements in the other ACLs can be checked for the **log** option in the same way. The **show running-config vlan 222** command confirms VLAN configuration.

```
device# show ip access-lists 136
Extended IP access list 136: 1002 entries
enable accounting
8: deny ip 99.99.99.0 0.0.0.255 any log <-- IPv4 extended deny statement includes log action

device# configure terminal
device(config)# vlan 222 by port
device(config-vlan-222)# vlan 222 by port
device(config-vlan-222)# tagged ethe 2/1/12 lag 45
device(config-vlan-222)# interface ve 222
device(config-vlan-222)# ipv6 access-group ipv6acl in logging enable
device(config-vlan-222)# mac access-group mac in logging enable
device(config-vlan-222)# ip access-group 136 in logging enable <-- IPv4 ACL 136 w/ logging enabled
!
!
device(config-vlan-222)# show running-config vlan 222
vlan 222 by port
tagged ethe 2/1/12 lag 45
router-interface ve 222
ipv6 access-group ipv6acl in logging enable
mac access-group mac in logging enable
ip access-group 136 in logging enable
!
!
device(config-vlan-222)# exit
device(config)#
```

The following examples check the contents of the MAC and IPv6 ACLs used in the previous example and confirm that statements containing the **log** option will trigger a log entry when matched.

```
device# show mac access-lists mac
mac access-list mac
deny any 0000.0000.0088 0000.0000.1111 log
permit any any log

device(config-ipv6-access-list ipv6acl)# show ipv6 access-lists ipv6acl
ipv6 access-list ipv6acl: 1 entry
10: permit ipv6 any any log
```

History

Release version	Command history
08.0.95	This command was introduced to replace the **logging-enable** command.

logging enable (PKI)

Enables logging of PKI events and, as an option, PKI packets.

Syntax

logging enable { **pki** | **pki-extended** }

no logging enabe { **pki** | **pki-extended** }

Command Default

PKI events and packets are not logged by default.

Parameters

pki

Specifies that PKI events be logged.

pki-extended

Specifies that PKI events and packets be logged.

Modes

Global configuration mode

Usage Guidelines

The no form of the command disables PKI logging or PKI extended logging.

Examples

The following example enables logging of PKI events and packets.

```
device# configure terminal
device(config)# enable logging pki-extended
```

History

Release version	Command history
08.0.70	This command was introduced.

logging enable config-changed

Configures a device to generate syslog messages when the startup-config file is changed.

Syntax

logging enable config-changed

no logging enable config-changed

Command Default

The trap is enabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the generation of the syslog messages when the startup-config file is changed.

Examples

The following example enables syslog messages when the startup-config file is changed.

```
device(config)# logging enable config-changed
```

logging enable rfc5424

Enables Syslog logging in accordance with RFC 5424 which provides the maximum amount of information in every Syslog in a structured format.

Syntax

logging enable rfc5424

no logging enable rfc5424

Command Default

Syslog is generated in accordance with RFC 3164.

Modes

Global configuration mode

Usage Guidelines

The Logging buffer must be cleared before enabling Syslog specific to RFC 5424, otherwise system throws an error.

If the **logging cli-command** command is present in the running configuration, switching between the default RFC 3164 Syslog logging and the RFC 5424-specific Syslog logging is not supported.

The **no** form of the command enables Syslog logging in accordance with RFC 3164.

Examples

The following example enables Syslog logging in accordance with RFC 5424.

```
device(config)# clear logging
device(config)# logging enable rfc5424
```

The following example removes the configuration to enable Syslog logging specific to RFC 5424 and enables Syslog logging in accordance with RFC 3164.

```
device(config)# clear logging
device(config)# no logging enable rfc5424
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30h	Support for the command was added.

logging enable tcp-ao

Enables syslog to make a record of each received packet that fails MAC validation.

Syntax

logging enable tcp-ao

no logging enable tcp-ao

Command Default

By default, syslog does not record MAC validation failures.

Parameters

tcp-ao

Specifies that logging is for TCP keychain authentication failures.

Modes

Global configuration mode

Usage Guidelines

The no form of the command turns off logging of TCP keychain authentication failures.

Examples

The following example enables the logging of received packets that fail TCP keychain authentication.

```
device# configure terminal
device(config)# logging enable tcp-ao
```

History

Release version	Command history
09.0.10	This command was introduced.

logging enable user-login

Enables viewing user login details in syslog messages and traps.

Syntax

logging enable user-login

no logging enable user-login

Command Default

User login details in syslog messages and traps are not enabled by default.

Modes

Global configuration mode

Usage Guidelines

RUCKUS devices send syslog messages and SNMP traps when a user logs in to or out of user EXEC or privileged EXEC mode in the CLI. The feature applies to users whose access is authenticated by an authentication method list based on a local user account, RADIUS server, or TACACS/TACACS+ server.

The **no** form of the command disables the user login details from syslog messages and traps.

Examples

The following example enables viewing the user login details.

```
device(config)# logging enable user-login
```

logging facility

Configures the log facility to log messages from the device.

Syntax

logging facility *facility-name*

no logging facility

Command Default

The default facility for messages that the device sends to the syslog server is "user".

Parameters

facility-name

Specifies the facility to log the messages from the device. The facility name can be one of the following:

auth

Security or authorization messages.

cron

cron/at subsystem.

daemon

System daemons.

kern

Kernel messages.

local0

Reserved for local use.

local1

Reserved for local use.

local2

Reserved for local use.

local3

Reserved for local use.

local4

Reserved for local use.

local5

Reserved for local use.

local6

Reserved for local use.

local7

Reserved for local use.

lpr
Line printer subsystem.

mail
Mail system.

news
Netnews subsystem.

syslog
Messages generated internally by syslog.

sys9
Reserved for system use.

sys10
Reserved for system use.

sys11
Reserved for system use.

sys12
Reserved for system use.

sys13
Reserved for system use.

sys14
Reserved for system use.

user
Random user-level messages.

uucp
UUCP subsystem.

Modes

Global configuration mode

Usage Guidelines

The syslog daemon on the syslog server uses a facility to determine where to log the messages from the RUCKUS device. You can specify only one facility. If you configure the device to use two syslog servers, the device uses the same facility on both servers.

The **no** form of the command restores the default facility.

Examples

The following example changes the log facility.

```
device(config)# logging facility local0
```

logging host

Configures a syslog server.

Syntax

logging host { *ipv4-addr* | *server-name* | **ipv6** *ipv6-addr* } [**udp-port** *number*]

no logging host { *ipv4-addr* | *server-name* | **ipv6** *ipv6-addr* } [**udp-port** *number*]

Command Default

Syslog server is not configured.

Parameters

ipv4-addr
: Configures a syslog server with the specified IPv4 address.

server-name
: Configures a syslog server with the specified name..

ipv6 *ipv6-addr*
: Configures a syslog server with the specified IPv6 address.

udp-port *number*
: Specifies the UDP port number.

Modes

Global configuration mode

Usage Guidelines

You can specify up to six syslog servers by configuring the command.

The **no** form of the command removes the syslog server configuration.

Examples

The following example configures a syslog server with IP address 10.0.0.99.

```
device(config)# logging host 10.0.0.99
```

To specify an additional syslog server, enter the **logging host** command again.

```
device(config)# logging host 10.0.0.100
```

logging on

Enables local syslog logging.

Syntax

logging on

no logging on

Command Default

Local syslog logging is enabled by default.

Modes

Global configuration mode

Usage Guidelines

This command enables local syslog logging with the following defaults:

- Messages of all severity levels (Emergencies through Debugging) are logged.
- Up to 50 messages are retained in the local syslog buffer.
- No syslog server is specified.

An expected delay of over 30 seconds is observed for this command functionality to take effect.

The **no** form of the command disables local syslog logging.

Examples

The following example enables local syslog logging.

```
device(config)# logging on
```

logging persistence

Configures the device to save system log messages after a soft reboot.

Syntax

logging persistence

no logging persistence

Command Default

Logging persistence is not configured.

Modes

Global configuration mode

Usage Guidelines

If the syslog buffer size was set to a different value using the command **logging buffered**, the system log will be cleared after a soft reboot, even if this feature is enabled. This clearing will occur only with a soft reboot immediately following a syslog buffer size change. A soft reboot by itself will not clear the system log. To prevent the system from clearing the system log, leave the number of entries allowed in the syslog buffer unchanged.

Enabling logging persistence does not save syslog messages after a hard reboot. When the device is power-cycled, the syslog messages are cleared.

If logging persistence is enabled and you load a new software image on the device, you must first clear the log if you want to reload the device.

The **no** form of the command disables the device from saving system log messages after a soft reboot.

Examples

The following example configures the device to save system log messages after a soft reboot.

```
device(config)# logging persistence
```

login-page

Configures the login page details to redirect the client to the login page hosted on the external captive portal server.

Syntax

Syntax for use with a Ruckus Cloudpath server:
login-page /enroll/ *page-name*

Syntax for use with an Aruba Clearpass server:
login-page /guest/ *page-name*

Syntax for use with an Cisco ISE server:
login-page *page-name*

no login-page *page-name*

Command Default

Login page for redirecting the client is not configured.

Parameters

page-name

Specifies the login page created on the external captive portal server. For Cisco ISE servers, the name of the login page is created by the server.

Modes

Captive portal configuration mode

Usage Guidelines

Note that the terms Captive Portal and external web authentication are used interchangeably.

The login page details must be same as the login page hosted on the external captive portal server.

The **no** form of the command removes the login page configuration.

Examples

The following example configures the login page details to redirect the client to the login page hosted on the external captive portal server, which in this case is a Ruckus Cloudpath server.

```
device(config)# captive-portal cp_ruckus
device(config-cp-cp_ruckus)# login-page /enroll/ruckusguestlogin.php
```

The following example configures the login page details when an Aruba Clearpass server is used.

```
device(config)# captive-portal cp_ruckus
device(config-cp-cp_ruckus)# login-page /guest/ruckus/guestlogin.php
```

The following example configures the login page details when a Cisco ISE server is used.

```
device(config)# captive-portal cp_ruckus
device(config-cp-cp_ruckus)# login-page ruckusguestlogin.php
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 08.0.30j

logmgr clear-fetched-logs

Clears the fetched logs.

Syntax

logmgr clear-fetched-logs

Modes

Privileged EXEC mode

Usage Guidelines

You must run the **logmgr clear-fetched-logs** command first to display the local logs using the **show log debug** command.

Examples

The following example clears the fetched logs.

```
device# logmgr clear-fetched-logs
```

History

Release version	Command history
08.0.95	This command was introduced.

logmgr fetch

Fetches logs from remote units if there is sufficient memory to store them locally.

Syntax

logmgr fetch *module sub-module severity unit-id*

logmgr fetch management restconf all

Command Default

Fetching of logs is not enabled by default.

Parameters

module
: Specifies a module or list of modules (separated by commas) from which logs are collected. Enter **all** to include all modules.

sub-module
: Specifies a sub-module or list of sub-modules (separated by commas) from which logs are collected. Enter **all** if multiple modules are specified. If only a single module is specified, then specify a single sub-module or list of sub-modules (separated by commas) belonging to the module.

severity
: Specifies the severity level or list of severity levels (separated by commas) by which logs are collected. Enter "all" to include all severity levels.

unit-id
: Specifies the unit or list of units (separated by commas) from which logs are collected. Enter **all** to fetch the logs from all units.

managementrestconfall
: Specifies all RESTCONF management logs.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **logmgr fetch** command in conjunction with the **show log debug** command to view the logs.

Examples

The following example fetches the logs from remote unit 2.

```
device# logmgr fetch all all all 2
Batch Fetch Starting...units 2 in progress
        Bytes Module/Submodule/Category (high=emerg,alert,crit,err low=warning,notice,info,debug)
UNIT 2
       321560 infra/log_clf/high
       331560 infra/log_clf/low
       313560 infra/logmgr/high
       323560 infra/logmgr/low
       289560 infra/qos/high
       299560 infra/qos/low
       329631 infra/stacking/high
       339633 infra/stacking/low
       289560 l2/l2_sub/high
       299560 l2/l2_sub/low
       289560 l3/l3_sub/high
       299560 l3/l3_sub/low
       337560 mcast/mcast_sub/high
       347560 mcast/mcast_sub/low
       281560 nms/lldp/high
       291560 nms/lldp/low
       305560 nms/nms_sub/high
       315560 nms/nms_sub/low
       345560 platform/chassis/high
       355560 platform/chassis/low
       385560 security/security_sub/high
       395560 security/security_sub/low
       353570 system/system_sub/high
       363560 system/system_sub/low
Fetch is complete
```

The following example fetches the management RESTCONF logs.

```
device# logmgr fetch management restconf all

Batch Fetch Starting...units 1 in progress
ICX7650-48P Router#
        Bytes Module/Submodule/Category (high=emerg,alert,crit,err low=warning,notice,info,debug)
UNIT 1
         2556B management/restconf/high
Fetch is complete
```

History

Release version	Command history
08.0.95	This command was introduced.
09.0.00	This command was modified so that the **managementrestconfall** keywords were added.

logmgr help

Provides the details about the usage, syntax, and examples of Log Manager commands.

Syntax

logmgr help

Modes

Privileged EXEC mode

Examples

The following example shows the usage and examples of Log Manager commands.

```
device# logmgr help
List Logs ============================================================
Syntax: logmgr list <modules> <submodules> <severities> <units>
If no units are specified, will list local logs
Examples:
        'logmgr list all all all all' - display all logs on all units
        'logmgr list all all all' - display all logs on local unit
Note: 'high' includes err,crit,alert,emerg. 'low' includes debug,info,notice,warning

Fetch Logs ===========================================================
Syntax: logmgr fetch <modules> <submodules> <severities> <units>
All parameters are required. Can clear fetched logs with 'logmgr clear-fetched-logs'
Examples:
        'logmgr fetch all all all all' - fetch all logs from all units
        'logmgr fetch infra cfg_sync_lib,cfg_sync_proc, info 1,3' - fetch subset of logs from units 1
and 3
Note: Can fetch from local unit to get a snapshot of the logs at that point in time
Note: Logs of severity err,crit,alert,emerg will be fetched together. Same for
debug,info,notice,warning.

Show Logs ============================================================
Syntax: show log debug <modules> <submodules> <severities> <units> <start> <end> <txn_id>
Note: There may be a delay depending on the size of the subset of logs specified
        If 'fetch' has been called then the fetched logs will be displayed. Otherwise the local logs
will be displayed.
Examples with no fetched logs:
        'show log debug all all all' - will display all local logs (module, submodle, severity are
required)
        'show log debug infra cfg_sync_proc,qos info,err' - display subset of local logs
        'show log debug infra cfg_sync_proc,qos err+' - display subset of logs with severities err or
higher
        'show log debug all all all Apr_6_22:44:55:00 Apr_6_22:49:00 123456789' - display logs between
those two times and with the txn id
        'show log debug all all all end=Apr_6_22:49:00 txn_id=123456789' - display logs before the end
time and with the txn id
Examples with fetched logs: (uses Fetch CLI arguments by default. Can provide new arguments as well)
        'show log debug' - display the fetched logs with the same parameters passed to the Fetch CLI
        'show log debug unit=2' - only display the fetched logs from unit 2
        'show log debug module=infra submodule=cfg_sync_proc' - display fetched logs but with newly
specified module/submodule

Monitor Logs =========================================================
Syntax: logmgr monitor <module>:<submodule1,...,submoduleN>:<severity1,...,severityN>
Note: Logs of severity err,crit,alert,emerg will be shown together. Same for debug,info,notice,warning.
Example:
        'logmgr monitor infra:cfg_sync_proc,qos:info,err nms:restconf:notice

Upload Logs ==========================================================
Note: This uploads Fetched logs. Fetch before uploading
Note: For TFTP, make sure the file exists already with correct permissions to be able to write to it
```

History

Release version	Command history
09.0.00	This command was introduced.

logmgr hierarchy

Displays the hierarchy of the supported modules and sub-modules.

Syntax

logmgr hierarchy

Modes

Privileged EXEC mode

Usage Guidelines

You must use the exact module names and sub-module names as listed in the log manager hierarchy for all Log Manager operations.

Examples

The following example shows the maximum size of all modules, sub-modules, and their hierarchy.

```
device# logmgr hierarchy
-------------------------------------------------------------
| Module             | Submodule          |      Size (KB) |
-------------------------------------------------------------
  system               system_sub                    472.5
  system               Total                         472.5
  platform             platform_sub                   94.5
  platform             chassis                        94.5
  platform             link                           94.5
  platform             plm                            94.5
  platform             poe                            94.5
  platform             Total                         472.5
  infra                stacking                      109.4
  infra                cfg_sync_lib                   65.6
  infra                cfg_sync_proc                  65.6
  infra                qos                            65.6
  infra                logmgr_lib                     65.6
  infra                logmgr_proc                    65.6
  infra                log_clf_fe                     21.9
  infra                log_clf_be                     21.9
  infra                conf_archive                   65.6
  infra                infra_cmn                      21.9
  infra                fitrace_fe                     21.9
  infra                rcm                           109.4
  infra                itc                            65.6
  infra                ssave                          21.9
  infra                Total                         787.6
  l2                   l2_sub                         27.8
  l2                   vlan                           27.8
  l2                   lag                            27.8
  l2                   udld                           27.8
  l2                   mvrp                           27.8
  l2                   fdb                            27.8
  l2                   pvlan                          27.8
  l2                   stp                            27.8
  l2                   rstp                           27.8
  l2                   mstp                           27.8
  l2                   mrp                            27.8
  l2                   lldp                           27.8
  l2                   erlb                           27.8
  l2                   loam                           27.8
  l2                   l2port                         27.8
  l2                   mct                            27.8
  l2                   flexlink                       27.8
  l2                   Total                         472.5
  l3                   l3_sub                        472.5
  l3                   Total                         472.5
  mcast                mcast_sub                      94.5
  mcast                l3mcast                        94.5
  mcast                mcrep                          94.5
  mcast                igmp-snoop                     94.5
  mcast                mld-snoop                      94.5
  mcast                Total                         472.5
  security             security_sub                   22.5
  security             ra_gaurd                       22.5
  security             dhcp6snoop                     22.5
  security             dhcpsnoop                      22.5
  security             ndi                            22.5
  security             macsec                         22.5
  security             acl_accounting                 22.5
  security             flexauth                       22.5
  security             webauth                        22.5
  security             fvcmgr                         22.5
  security             aclinfra                       22.5
  security             pbrl                           22.5
  security             brl                            22.5
  security             utp                            22.5
```

```
security            gendistfw                    22.5
security            sflow                        22.5
security            ippolicy                     22.5
security            sourcegaurd                  22.5
security            aclhitless                   22.5
security            dai                          22.5
security            ddos                         22.5
security            Total                       472.5
management          nms_sub                      31.5
management          clish                        52.5
management          cli_dict                     52.5
management          clam                         52.5
management          lldp                         31.5
management          restconf                     31.5
management          dhcpv4_client                31.5
management          dhcpv4_server                31.5
management          dhcpv6_server                31.5
management          snmpagentd                   31.5
management          manager                      52.5
management          plugin                       31.5
management          slam                         31.5
management          aaa                          31.5
management          snmpd_traps                  31.5
management          web                          31.5
management          rcm                          52.5
management          cfg_par                      52.5
management          nginx                        31.5
management          uwsgi                        31.5
management          rconsole                     31.5
management          Total                       787.6
fi_debug            debug_logs                  472.5
fi_debug            Total                       472.5
```

History

Release version	Command history
09.0.00	This command was introduced.

logmgr list

Lists the existing logs on the connected units (local and remote units).

Syntax

logmgr list *module sub-module severity unit-id*

Command Default

Logs are not listed by default.

Parameters

module

Specifies a module or list of modules (separated by commas) for which logs are listed. Enter **all** to include all modules.

sub-module

Specifies a sub-module or list of sub-modules (separated by commas) for which logs are listed. Enter **all** if multiple modules are specified. If only a single module is specified, then specify a single sub-module or list of sub-modules (separated by commas) belonging to the module.

severity

Specifies the severity level or list of severity levels (separated by commas) by which logs are listed. Enter **all** to include all severity levels.

unit-id

Specifies the unit or list of units (separated by commas) for which logs are listed. Enter **all** to list the logs from all units.

Modes

Privileged EXEC mode

Usage Guidelines

If the logs are generated using the debug commands, you must use the exact module names and sub-module names as listed in the log manager hierarchy.

If the logs are generated using distributed logger (dlogger), the modules and sub-modules must be specified based on the mapping of distributed logger modules to log manager displayed in the **show dlogger module filter lm-map** command output.

If the unit is not specified, specific logs on the local unit are listed.

The command output lists the logs on units at the time of execution, not on fetched logs.

Examples

The following example displays the list of existing logs on all units.

```
device# logmgr list all all all all
             Bytes Module/Submodule/Category (high=emerg,alert,crit,err low=warning,notice,info,debug)
UNIT 1
        11070B fi_debug/debug_logs/low
          338B infra/cfg_sync_lib/high
          256B infra/cfg_sync_lib/low
        51944B infra/cfg_sync_proc/low
          456B infra/conf_archive/low
          174B infra/infra_cmn/low
        13872B infra/itc/low
          224B infra/logmgr_proc/high
         4687B infra/logmgr_proc/low
        20695B infra/qos/low
          820B infra/stacking/low
          558B l2/fdb/high
          110B l2/stp/low
         8490B management/aaa/low
          770B management/cfg_par/high
        14059B management/cfg_par/low
         1413B management/clam/high
         8179B management/cli_dict/low
         2147B management/clish/high
         1507B management/clish/low
          238B management/dhcpv4_client/high
        22478B management/dhcpv4_client/low
          274B management/fi_syslog/high
         1313B management/fi_syslog/low
          624B management/manager/high
        68088B management/manager/low
          104B management/nms_sub/high
        14075B management/rcm/low
         3276B management/slam/low
          378B management/snmpagentd/low
         1453B management/snmpd_traps/high
         3579B platform/link/low
UNIT 2
         1854B fi_debug/debug_logs/high
        10222B fi_debug/debug_logs/low
          112B infra/cfg_sync_lib/high
        50158B infra/cfg_sync_proc/low
          456B infra/conf_archive/low
          174B infra/infra_cmn/low
        11001B infra/itc/low
          224B infra/logmgr_proc/high
         4271B infra/logmgr_proc/low
        19764B infra/qos/low
         2333B infra/stacking/low
          558B l2/fdb/high
         6636B management/aaa/low
          483B management/cfg_par/high
         7595B management/cfg_par/low
         1009B management/clam/high
        13686B management/cli_dict/low
          347B management/dhcpv4_client/high
         7988B management/dhcpv4_client/low
          274B management/fi_syslog/high
         1452B management/fi_syslog/low
          208B management/manager/high
        28644B management/manager/low
         3276B management/slam/low
          189B management/snmpagentd/low
         2608B management/snmpd_traps/high
         3577B platform/link/low
```

History

Release version	Command history
08.0.95	This command was introduced.

logmgr monitor

Displays real-time updates to the specified logs on local units.

Syntax

logmgr monitor *module*:*sub-module*: *severity*

Command Default

Logs are not monitored by default.

Parameters

module
: Specifies to display live updates to the logs specific to the module.

sub-module
: Specifies to display live updates to the logs specific to the sub-module.

severity
: Specifies to display live updates to the logs filtered by the severity levels.

Modes

Privileged EXEC mode

Usage Guidelines

If the logs are generated using the debug commands, you must use the exact module names and sub-module names as listed in the log manager hierarchy.

If the logs are generated using distributed logger (dlogger), the modules and sub-modules must be specified based on the mapping of distributed logger modules to log manager displayed in the **show dlogger module filter lm-map** command output.

This command enables the monitoring mode and simultaneously blocks the command line interface. You must press **Ctrl+C** to cancel the monitoring mode.

Monitoring the real-time updates to the logs is applicable only on local units.

Examples

The following example displays real-time updates to the specific logs.

```
device# logmgr monitor infra:stacking:all:all
==> /logmgr/logs//infra/stacking_low_tmp.log <==
Jun 02 22:36:08:026672:info:infra:stacking:1:283283157943040: T=7m39.4: Election, I cc4e.248b.a8a8 was
alone --> active, ID=1, pri=128, 2U(1-2), A=u1, nbr#=1 1,reason: u2: port-up,
Jun 02 22:36:08:921219:debug:infra:stacking:1:283871568462592: Detect stack unit 2 has different
startup config flash, will synchronize it
Jun 02 22:36:08:921496:debug:infra:stacking:1:283871568462592: T=7m40.3: Synchronize webauth files to u2
Jun 02 22:36:10:906739:info:infra:stacking:1:285465001329408: T=7m42.3: Election, I cc4e.248b.a8a8 was
active, no change, ID=1, pri=128, 2U(1-2), A=u1, nbr#=1 1,reason: u1: stk-po-chg,
Jun 02 22:36:11:937383:debug:infra:stacking:1:286401304199936: T=7m43.3: Synchronize startup config to
u2
Jun 02 22:37:11:627414:info:infra:stacking:1:331356726887168: T=8m43.0: Assigned unit 2 to be standby

==> /logmgr/logs//infra/stacking_low_tmp.log <==
Jun 02 23:31:29:779689:debug:infra:stacking:1:2405005592101632: T=1h3m1.1: Unit 1 loses all neighbors.
Jun 02 23:31:29:784160:debug:infra:stacking:1:2405005592101632: T=1h3m1.1: Active unit 1 deletes u2 but
keeps its static config.
```

History

Release version	Command history
09.0.00	This command was introduced.

logmgr upload

Uploads the fetched logs to an external server.

Syntax

logmgr upload { **scp** | **tftp** } *ip-address file-name*

Command Default

Fetched logs are stored locally.

Parameters

scp

Specifies Secure Copy (SCP) as the method used to transfer log files to the external server.

tftp

Specifies Trivial File Transfer Protocol (TFTP) as the method used to transfer log files to the external server.

ip-address

Specifies the IP address of the external server.

file-name

Specifies the name of the fetched log file.

Modes

Privileged EXEC mode

Examples

The following example uploads the fetched logs to a TFTP server.

```
device# logmgr upload tftp 10.198.137.97 GZ.tar
Starting Upload of Fetched Logs
device#
Upload is complete
```

History

Release version	Command history
09.0.00	This command was introduced.

loop-detection

Enables loop detection on a physical port (Strict Mode) or on a VLAN (Loose Mode).

Syntax

loop-detection [**shutdown-disable**]

no loop-detection [**shutdown-disable**]

Command Default

Loop detection is disabled by default.

Parameters

shutdown-disable

Disables shutdown of a port due to loop detection.

Modes

Interface configuration mode

VLAN configuration mode

Usage Guidelines

By default, the port sends test packets every one second, or the number of seconds specified by the **loop-detection-interval** command.

The **no** form of the command disables loop detection.

Examples

The following example enables loop detection on a physical port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# loop-detection
```

The following example enables loop detection on a VLAN.

```
device(config)# vlan 20
device(config-vlan-20)# loop-detection
```

loop-detection-interval

Configures how often a test packet is sent on a port.

Syntax

loop-detection-interval *number*

no loop-detection-interval *number*

Command Default

Loop detection time is set to 1 second.

Parameters

number

Specifies a value from 1 to 100 seconds. The system multiplies the entry by 0.1 to calculate the interval at which test packets are sent.

Modes

Global configuration mode

Usage Guidelines

When loop detection is enabled, the loop-detection time unit is 0.1 second, with a default of 10 (1 second). The range is from 1 (one tenth of a second) to 100 (10 seconds). You can use the **show loop-detection status** command to view the loop-detection interval.

The **no** form of the command sets the loop detection interval to the default global loop-detection interval of 1 second.

Examples

The following example sets the loop-detection interval to 5 seconds (50*0.1).

```
device(config)# loop-detection-interval 50
```

loop-detection shutdown-disable

Disables shutdown of a port when a loop detection probe packet is received on an interface.

Syntax

loop-detection shutdown-disable

no loop-detection shutdown-disable

Command Default

Loop detection shutdown is enabled on the interface.

Modes

Interface configuration

Usage Guidelines

The **no** form of this command disables loop detection shutdown.

Shutdown prevention for loop-detect functionality allows users to disable shut down of a port when the loop detection probe packet is received on an interface. This provides control over deciding which port is allowed to enter in to an error-disabled state and go into a shutdown state when a loop is detected.

Examples

The following example disables loop detection shutdown on an interface.

```
device(config)# interface ethernet 1/1/7
device(config-if-e1000-1/1/7)# loop-detection shutdown-disable
```

History

Release version	Command history
08.0.20	This command was introduced.

loop-detection-syslog-interval

Specifies the interval (in minutes) at which a syslog is generated.

Syntax

loop-detection-syslog-interval *num*

no loop-detection-syslog-interval *num*

Command Default

The syslog interval is 5 minutes.

Parameters

num

Specifies the syslog interval in minutes. The interval can range from 1 through 1440 minutes.

Modes

Global configuration

Usage Guidelines

The **no** form of this command restores the default settings.

You can specify the interval at which the loop detection syslog message is generated if the **loop-detection-shutdown-disable** command is configured for the port. This configuration applies to all the ports that have loop detection shutdown prevention configured.

Examples

The following example shows the loop detection syslog interval set to 1 hour.

```
device(config)# loop-detection-syslog-interval 60
```

History

Release version	Command history
08.0.20	This command was introduced.

lsdb-limit

Configures the maximum number of link state advertisements (LSAs) in the link state database (LSDB).

Syntax

lsdb-limit *value*

no lsdb-limit *value*

Command Default

The maximum number of LSAs in the LSDB is 500000 for OSPFv2 and 250000 for OSPFv3.

Parameters

value

Specifies the maximum number of LSAs. For OSPFv2, valid values range from 1 through 500000. The default is 500000. For OSPFv3, valid values range from 1 through 250000. The default is 250000.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

Usage Guidelines

The **no** form of the command restores the default value.

Examples

The following example sets the maximum number of LSAs in the LSDB to 40 in OSPF router configuration mode.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# lsdb-limit 40
```

The following example sets the maximum number of LSAs in the LSDB to 50 in OSPFv3 router configuration mode.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# lsdb-limit 50
```

History

Release version	Command history
08.0.95	This command was introduced.

lsdb-overload-interval

Configures the period of time that must pass before a router checks the link state database (LSDB) overflow state.

Syntax

lsdb-overload-interval *interval*

no lsdb-overload-interval *interval*

Command Default

The router checks the LSDB overflow state every 600 seconds.

Parameters

interval

Specifies the interval in seconds. Valid values range from 0 through 86400. The default is 600 seconds.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

Usage Guidelines

The **no** form of the command restores the default value.

Examples

The following example configures the router to check the LSDB overflow state every 900 seconds for OSPFv2.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# lsdb-overload-interval 900
```

The following example configures the router to check the LSDB overflow state every 450 seconds for OSPFv3.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# lsdb-overload-interval 450
```

History

Release version	Command history
08.0.95	This command was introduced.

l2protocol dot1q-tunnel

Enables Q-in-Q BPDU tunneling on an interface.

Syntax

l2protocol dot1q-tunnel [**cdp** | **lacp** | **lldp** | **stp**]

no l2protocol dot1q-tunnel [**cdp** | **lacp** | **lldp** | **stp**]

Parameters

cdp
Enables CDP tunneling on the interface.

lacp
Enables LACP tunneling on the interface.

lldp
Enables LLDP tunneling on the interface.

stp
Enables STP (PVST, STP, RSTP, MSTP) tunneling on the interface.

Modes

Interface configuration mode

Usage Guidelines

When Q-in-Q BPDU tunneling is enabled on customer connected interface of the service provider device, all the received tunnel protocol packets will be tunneled to the service network. To prevent any locally generated (STP, LLDP, and so on) protocol packets on the service provider network from switching to the customer side, the corresponding protocols must be disabled on the device.

Q-in-Q BPDU tunneling is supported on tag-profile enabled port or selective Q-in-Q enabled port.

The **no** form of the command disables Q-in-Q tunneling.

Examples

The following example shows how to enable Q-in-Q BPDU tunneling on a tag-profile enabled port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# tag-profile enable
device(config-if-e1000-1/1/1)# l2protocol dot1q-tunnel
```

The following example shows how to enable Q-in-Q BPDU tunneling on a selective Q-in-Q enabled port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# qinq-tunnel cvlan 1 to 4 untag svlan 100
device(config-if-e1000-1/1/1)# l2protocol dot1q-tunnel
```

History

Release version	Command history
08.0.70	This command was introduced.

l2protocol dot1q-tunnel cos

Specifies a global Class of Service (CoS) value for Q-in-Q tunnel ports.

Syntax

l2protocol dot1q-tunnel cos *cos-value*

no l2protocol dot1q-tunnel cos *cos-value*

Command Default

The default CoS value is 5.

Parameters

cos-value

Specifies the CoS value globally so that the ingress BPDUs on the tunnel ports are encapsulated with the specified class. Valid values are from 1 through 7.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command sets the CoS value to the default value.

Examples

The following example sets the global CoS value for Q-in-Q BPDU tunneling as 6.

```
device# configure terminal
device(config)# l2protocol dot1q-tunnel cos 6
```

History

Release version	Command history
08.0.70	This command was introduced.

l2protocol dot1q-tunnel drop-threshold

Configures the maximum number of packets that can be processed on an interface for Q-in-Q BPDU tunneling before being dropped.

Syntax

l2protocol dot1q-tunnel drop-threshold { **all** | **cdp** | **lacp** | **lldp** | **stp** } *threshold-value*

no l2protocol dot1q-tunnel drop-threshold { **all** | **cdp** | **lacp** | **lldp** | **stp** } *threshold-value*

Parameters

all
Configures the drop threshold for all protocol packets.

cdp
Configures the drop threshold for CDP packets.

lacp
Configures the drop threshold for LACP packets.

lldp
Configures the drop threshold for LLDP packets.

stp
Configures the drop threshold for STP packets.

threshold-value
Specifies the threshold rate in packets per second. Valid values are from are from 1 through 4096.

Modes

Interface configuration mode

Usage Guidelines

When the **all** option is used on an interface, individual protocol option cannot be used.

The **no** form of the command resets the threshold values to 0 and disables the drop threshold.

Examples

The following example configures the port drop threshold value for a Q-in-Q tunneling port.

```
device(config)# interface ethernet 1/1/1
(config-if-e1000-1/1/1)# l2protocol dot1q-tunnel drop-threshold all 3000
```

History

Release version	Command history
08.0.70	This command was introduced.

l2protocol dot1q-tunnel-mac

Specifies the multicast MAC address for Q-in-Q BPDU tunneling.

Syntax

l2protocol dot1q-tunnel-mac { *mac-address* | **original** }

no l2protocol dot1q-tunnel-mac { *mac-address* | **original** }

Command Default

The default MAC value is 0100.0ccd.cdd1.

Parameters

mac-address

Specifies the tunnel MAC address.

original

Specifies to use the original MAC address in the packet as tunnel MAC address.

Modes

Global configuration mode

Usage Guidelines

The original MAC address can be used as an option to interoperate with older ICX 6xxx series devices.

The **original** option must not be used if the transit switch in the service provider network is an ICX 6xxx device or any vendor that consumes standard BPDU as it may result in protocol packet drop.

Both Server Provider Edge switches must have the same tunnel MAC address.

The **no** form of the command sets the multicast MAC address for Q-in-Q BPDU tunneling to the default value.

Examples

The following example sets the multicast MAC address for Q-in-Q BPDU tunneling.

```
device# configure terminal
device(config)# l2protocol dot1q-tunnel-mac 0100.1a2b.3c4d
```

History

Release version	Command history
08.0.70	This command was introduced.

l2protocol dot1q-tunnel shutdown-threshold

Specifies the maximum number of packets that can be processed on an interface for Q-in-Q BPDU tunneling beyond which the ingress port is put in error-disabled state.

Syntax

l2protocol dot1q-tunnel shutdown-threshold { **all** | **cdp** | **lacp** | **lldp** | **stp** } *threshold-value*

no l2protocol dot1q-tunnel shutdown-threshold { **all** | **cdp** | **lacp** | **lldp** | **stp** } *threshold-value*

Parameters

all
Configures the shutdown threshold for all protocol packets.

cdp
Configures the shutdown threshold for CDP packets.

lacp
Configures the shutdown threshold for LACP packets.

lldp
Configures the shutdown threshold for LLDP packets.

stp
Configures the shutdown threshold for STP packets.

threshold-value
Specifies the threshold rate in packets per second. Valid values are from are from 1 through 4096.

Modes

Interface configuration mode

Usage Guidelines

When the **all** option is used on an interface, individual protocol option cannot be used.

The **no** form of the command resets the threshold values to 0 and disables the shutdown threshold.

Examples

The following example configures the port shutdown threshold value for a Q-in-Q tunneling port.

```
device(config)# interface ethernet 1/1/1
(config-if-e1000-1/1/1)# l2protocol dot1q-tunnel shutdown-threshold all 3000
```

History

Release version	Command history
08.0.70	This command was introduced.

Commands M

mac access-group (ACL)

Binds an access-list filter to an interface.

Syntax

mac access-group { *name* **in** } [**logging enable**]

no mac access-group { *name* **in** } [**logging enable**]

Parameters

name

MAC ACL name

in

Indicates that the MAC ACL is to be applied to inbound traffic.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command unbinds the MAC ACL from the interface.

The **logging enable** option included in a mac access-group bind allows logging of any matched statement within the applied mac access-list that contains a **log** action.

Examples

The following example binds the MAC ACL named mac123 to an interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000/1/1/2)# mac access-group mac123 in
```

The following example unbinds MAC ACL mac123 from the interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000/1/1/2)# no mac access-group mac123 in
```

The following example creates a mac access-list and applies it to a lag interface with logging turned on.

```
device# configure terminal
device(config)# mac access-list mac
device(config-macl-mac)# enable accounting
device(config-macl-mac)# deny any 0000.0000.0088 0000.0000.1111 log
device(config-macl-mac)# permit any any log
device(config-macl-mac)# interface lag 46
device(config-lag-if-lg46)# mac access-group mac in logging enable
device(config-lag-if-lg46)# exit
device(config)#
```

History

Release version	Command history
08.0.95	This command was introduced.

mac access-list

Creates Layer 2 access list.

Syntax

mac access-list { *name* }

no mac access-list { *name* }

Parameters

name

Name of the MAC ACL to be applied.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command deletes the ACL.

The syntax for creating MAC ACL filters in MAC ACL configuration sub-mode is as follows:

device(config-macl-name)# **permit** | **deny** { { *source_mac_address* [*source_mask*] } | **any** } { *destination_mac_address* [*destination_mask*] } | **any** } [**ether-type** *ether_type_value*] [**log**] [**mirror**]

The **log** option can be added to a MAC ACL and must be enabled with the **logging enable** option for ingress traffic as part of a **mac access-group** command.

The mirroring option that can be specified as part of the filter definition must be used in conjunction with the **acl-mirror-port** command configured for the interface on which the MAC ACL is bound. The mirroring option can be disabled only by the **no acl-mirror-port** command entered for the same interface. Refer to the *RUCKUS FastIron Monitoring Configuration Guide* for more information on mirroring.

Valid Ethertype values for MAC ACLs are in the range 600 through ffff.

Examples

The following example deletes the MAC ACL mac123.

```
device# configure terminal
device(config)# no mac access-list mac123
```

The following example creates the MAC ACL mac123 and adds filters to be applied globally at Layer 2. The first action for source MAC (1111.222.3333) allows traffic from destination MAC address 4444.5555.6666. The second action for source MAC address 1234.5678.9000 allows traffic from any destination MAC address. The more restricted set of destination addresses allowed must be placed first, with the **any** statement placed last for the filters to work as planned.

```
device# configure terminal
device(config)# mac access-list mac123
device(config-macl-mac123)# permit 1111.2222.3333 ffff.ffff.ffff 4444.5555.6666 ffff.ffff.ffff
device(config-macl-mac123)# permit 1234.5678.9000 ffff.ffff.ffff any
device(config-macl-mac123)# exit
device(config)#
```

The following example allows any source MAC address to send traffic with an Ether-type qualifier of 0x0800 to any destination MAC address.

```
device# configure terminal
device(config)# mac access-list mac456
device(config-macl-mac456)# permit any any ether-type 0800
```

The following example removes the first action line from the MAC access-list mac123.

```
device# configure terminal
device(config)# mac access-list mac123
device(config-macl-mac123)# no permit 1111.2222.3333 ffff.ffff.ffff 4444.5555.6666 ffff.ffff.ffff
```

The following example allows statistics to be collected on the MAC ACL. The ACL denies all traffic from a specific set of IP addresses and permits all other traffic. All traffic matching the deny statement or the permit statement creates a log entry for LAG interface 46 because logging is enabled as part of applying the MAC ACL to the LAG with the **mac access-group** command.

```
device# configure terminal
device(config)# mac access-list maclog
device(config-macl-maclog)# enable accounting
device(config-macl-maclog)# deny any 0000.0000.0088 0000.0000.1111 log
device(config-macl-maclog)# permit any any log
device(config-macl-maclog)# interface lag 46
device(config-lag-if-lg46)# mac access-group maclog in logging enable
device(config-lag-if-lg46)# exit
device(config)#
```

History

Release version	Command history
08.0.95	This command was introduced.

mac-age-time

Configures the MAC address age timer.

Syntax

mac-age-time *seconds*

no mac-age-time *seconds*

Command Default

The default MAC address age timeout is 300 seconds.

Parameters

seconds

Timeout value in seconds.The timeout value range is 0 (disabled) or from 10 through 86,400 seconds.

Modes

Global configuration mode

Usage Guidelines

To disable the MAC address age timer, set the timeout value to 0.

If the total number of MAC addresses in the system is more than 16, 000, RUCKUS recommends a MAC address age timer greater than 60 seconds. If the total number of MAC addresses in the system is more than 64, 000, RUCKUS recommends a MAC address age timer greater than 120 seconds.

Usually, the actual MAC address age time is from one to two times the configured value. For example, if you set the MAC address age timer to 60 seconds, learned MAC address entries age out after remaining unused for between 60 and 120 seconds. However, if all of the following conditions are met, then the MAC address entries age out after a longer than expected duration:

- The MAC address age timer is set to greater than 630 seconds.
- The number of MAC address entries is over 6, 000.
- All MAC address entries are learned from the same packet processor.
- All MAC address entries age out at the same time.

The **no** form of the command resets the MAC address age timeout value to the default value.

Examples

The following example configures the MAC address age timeout to 570 seconds.

```
device(config)# mac-age-time 570
```

mac-authentication auth-filter

Applies the specified filter on the interface and the MAC addresses defined in the filter (MAC filter) do not have to go through authentication.

Syntax

mac-authentication auth-filter *filter-id vlan-id*

no mac-authentication auth-filter *filter-id vlan-id*

Command Default

There are no filters applied on the interface.

Parameters

filter-id

Specifies the identification number of the filter to be applied on the interface.

vlan-id

Specifies the identification number of the VLAN to which the filter is applied.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command disables this functionality.

A client can be authenticated in an untagged VLAN or tagged VLAN using the MAC address filter for MAC authentication. If auth-filter has tagged VLAN configuration, the clients are authenticated in auth-default VLAN and tagged VLAN provided in auth-filter. The clients authorized in auth-default VLAN allow both untagged and tagged traffic.

If the VLAN is not specified in the command, the auth-default VLAN is used.

Examples

The following example applies the MAC address filter on VLAN 2.

```
device(config)# authentication
device(config-authen)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# mac-auth auth-filter 1 2
```

History

Release version	Command history
08.0.20	This command was introduced.

mac-authentication dot1x-disable

Configures the device so that 802.1X authentication is not performed after successful MAC authentication.

Syntax

mac-authentication dot1x-disable

no mac-authentication dot1x-disable

Command Default

By default, 802.1X authentication is also performed after successful MAC authentication.

Modes

Authentication configuration sub-mode

Usage Guidelines

The **no** form of the command restores the default.

The command is applicable only when the authentication sequence is configured as MAC authentication followed by 802.1X authentication.

Examples

The following example disables 802.1X authentication following a successful MAC authentication when MAC authentication is performed first.

```
device# configure terminal
device)config)# authentication
device(config-authen)# mac-authentication dot1x-disable
```

History

Release version	Command history
08.0.80	This command was introduced.

mac-authentication dot1x-override

Configures the device to perform 802.1X authentication when MAC authentication fails when the authentication sequence is configured as MAC authentication followed by 802.1X authentication.

Syntax

mac-authentication dot1x-override

no mac-authentication dot1x-override

Command Default

802.1X authentication is not performed when MAC authentication fails.

Modes

Authentication configuration mode

Usage Guidelines

This command is applicable only when the authentication sequence is configured as MAC authentication followed by 802.1X authentication.

If the **mac-authentication dot1x-override** command is configured, the clients that failed MAC authentication undergoes 802.1X authentication if the failure action is configured as restricted VLAN.

The **no** form of the command disables MAC authentication dot1x override functionality.

Examples

The following example enables MAC authentication dot1x override when MAC authentication fails.

```
device(config)# authentication
device(config-authen)# mac-authentication dot1x-override
```

History

Release version	Command history
08.0.20	This command was introduced.

mac-authentication enable (Flexible Authentication)

Enables MAC authentication globally or on a specific interface.

Syntax

mac-authentication enable [**all** | **ethernet** *device/slot/port*]

no mac-authentication enable [**all** | **ethernet** *device/slot/port*]

Command Default

MAC authentication is not enabled.

Parameters

all

Enables MAC authentication on all interfaces.

ethernet *device/slot/port*

Enables MAC authentication on a specific interface.

Modes

Authentication configuration mode

Usage Guidelines

The **mac-authentication enable** command without any options initializes MAC authentication feature globally. The **mac-authentication enable** command with the **all** or **ethernet** options, enables MAC authentication on all or a specific interface respectively. After initializing MAC authentication feature using the **mac-authentication enable** command, you must enable MAC authentication on all or a specific interface.

The **no** form of the command disables MAC authentication.

Examples

The following example globally enables MAC authentication.

```
device(config)# authentication
device(config-authen)# mac-authentcation enable
device(config-authen)# mac-authentication enable all
```

The following example enables MAC authentication on an interface.

```
device(config)# authentication
device(config-authen)# mac-authentcation enable
device(config-authen)# mac-authentication enable ethernet 1/1/11
```

History

Release version	Command history
08.0.20	This command was introduced.

mac-authentication password-format

Configures the MAC authentication password format.

Syntax

mac-authentication password-format { **xx-xx-xx-xx-xx-xx** | **xx:xx:xx:xx:xx:xx** | **xxxx.xxxx.xxxx** | **xxxxxxxxxxxx** } [**upper-case**]

no mac-authentication password-format { **xx-xx-xx-xx-xx-xx** | **xx:xx:xx:xx:xx:xx** | **xxxx.xxxx.xxxx** | **xxxxxxxxxxxx** } [**upper-case**]

Command Default

By default, the MAC address is sent to the RADIUS server in the format xxxxxxxxxxxx in lower case.

Parameters

xx-xx-xx-xx-xx-xx

Specifies the MAC authentication password format as xx-xx-xx-xx-xx-xx.

xx:xx:xx:xx:xx:xx

Specifies the MAC authentication password format as xx:xx:xx:xx:xx:xx.

xxxx.xxxx.xxxx

Specifies the MAC authentication password format as xxxx.xxxx.xxxx.

xxxxxxxxxxxx

Specifies the MAC authentication password format as xxxxxxxxxxxx.

upper-case

Converts the password to uppercase.

Modes

Authentication configuration mode

Usage Guidelines

The **no** form of the command restores the default.

You can configure the device to send the MAC address to the RADIUS server in the format xx-xx-xx-xx-xx-xx, xx.xx.xx.xx.xx.xx, xxxx.xxxx.xxxx, or xxxxxxxxxxxx. Use the **upper-case** password format option to send the password in uppercase.

Examples

The following example configures the MAC authentication password format as xx-xx-xx-xx-xx-xx.

```
device(config)# authentication
device(config-authen)# mac-authentication password-format xx-xx-xx-xx-xx-xx
```

The following example configures the MAC authentication password format as xx-xx-xx-xx-xx-xx in upper case.

```
device(config)# authentication
device(config-authen)# mac-authentication password-format xx-xx-xx-xx-xx-xx upper-case
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.20c	The **upper-case** option was added.
08.0.61	The **xx.xx.xx.xx.xx.xx** and the **xx:xx:xx:xx:xx:xx** options were added.

mac-authentication password-override (Flexible Authentication)

Enables password override for MAC authentication and specifies a user-defined password instead of the MAC address for MAC authentication.

Syntax

mac-authentication password-override *password*

no mac-authentication password-override *password*

Command Default

MAC authentication password override is not enabled.

Parameters

password

Specifies the password to be used for MAC authentication. The password can contain up to 32 alphanumeric characters, but cannot include blank spaces.

Modes

Authentication configuration mode

Usage Guidelines

The **no** form disables MAC authentication password override.

The MAC address is still the user name and cannot be changed.

Examples

The following example enables MAC authentication password override on the device.

```
device(config)# authentication
device(config-authen)# mac-authentication password-override password
```

History

Release version	Command history
08.0.20	This command was introduced.

mac-learn-disable

Disables a physical port from automatic learning the source MAC address.

Syntax

mac-learn-disable

no mac-learn-disable

Command Default

By default, when a packet with an unknown source MAC address is received on a port, the device learns this MAC address on the port.

Modes

Interface configuration mode

Usage Guidelines

This command is not available on virtual routing interfaces. Also, if this command is configured on the LAG virtual interface, MAC address learning (source MAC address) will be disabled on all the ports in the LAG.

Entering the command on a tagged ports disables source MAC address learning for that port in all VLANs of which that port is a member. For example, if tagged port 1/1/1 is a member of VLAN 10, 20, and 30 and you issue the **mac-learn-disable** command on port 1/1/1, port 1/1/1 will not learn source MAC addresses, even if it is a member of VLAN 10, 20, and 30.

The **no** form of the command allows a physical port to learn source MAC addresses.

Examples

The following example disables the automatic learning of the source MAC address.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# mac-learn-disable
```

mac-movement notification

Enables movement notifications and collects statistics for the movement of MAC addresses.

Syntax

mac-movement notification { **interval-history** *seconds* | **threshold-rate** *moves* **sampling-interval** *seconds* }

no mac-movement notification { **interval-history** *seconds* | **threshold-rate** *moves* **sampling-interval** *seconds* }

Parameters

interval-history *seconds*
: Configures the time interval during which the MAC address movement notification data is collected and enables a corresponding SNMP trap.

threshold-rate *moves*
: Configures the number of times a MAC address can move within the specified period until an SNMP trap is sent.

sampling-interval *seconds*
: Configures the sampling interval.

Modes

Global configuration mode

Usage Guidelines

The interval history includes statistical information such as the number of MAC addresses that move over the specified period, the total number of MAC address moves, which MAC addresses have moved, and how many times a MAC address has moved.

There is an upper limit on the number of MAC addresses for which MAC address-specific data is collected. This limit is necessary because it is not possible to report on all MAC addresses when many move.

Avoid threshold rates and sampling intervals that are too small. If you choose a small threshold and a sampling interval that is also small, an unnecessary high number of traps could occur.

The **no** form of the command disables movement notifications and stops collecting statistics for the movement of MAC addresses.

Examples

The following example sets the notification interval to 300 seconds.

```
device(config)# mac-movement notification interval-history 300
```

The following example sets the notification for 500 moves and a sampling interval of 400 seconds.

```
device(config)# mac-movement notification threshold-rate 500 sampling-interval 400
```

mac-notification interval

Configures the MAC-notification interval between each set of generated traps.

Syntax

mac-notification interval *secs*

no mac-notification interval *secs*

Command Default

No interval for MAC-notification is configured.

Parameters

secs

Specifies the MAC-notification interval in seconds between each set of traps that are generated. The range is from 1 through 3600 seconds (1 hour). The default interval is 3 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command sets the interval to its default value, which is 3 seconds.

A trap is sent aggregating the MAC events such as addition or deletion depending on the interval you specify.

Examples

The following example configures an interval of 40 seconds.

```
device(config)# mac-notification interval 40
```

The following example sets the interval to its default value:

```
device(config)# no mac-notification interval 3
```

History

Release version	Command history
08.0.10	This command was introduced.

macsec cipher-suite

Enables GCM-AES-128 bit encryption or GCM-AES-256 bit integrity checks on MACsec frames transmitted between group members.

Syntax

macsec cipher-suite { **gcm-aes-128** | **gcm-aes-128 integrity-only** | **gcm-aes-256** | **gcm-aes-256 integrity-only** }

no macsec cipher-suite { **gcm-aes-128** | **gcm-aes-128 integrity-only** | **gcm-aes-256** | **gcm-aes-256 integrity-only** }

Command Default

GCM-AES encryption or integrity checking is not enabled. Frames are encrypted starting with the first byte of the data packet, and ICV checking is enabled.

Parameters

gcm-aes-128
Enables GCM-AES-128 bit encryption.

gcm-aes-128 integrity-only
Enables GCM-AES-128 bit integrity checks.

gcm-aes-256
Enables GCM-AES-128 bit encryption.

gcm-aes-256 integrity-only
Enables GCM-AES-128 bit integrity checks.

Modes

dot1x-mka-cfg-group mode

Usage Guidelines

The **no** form of the command restores the default encryption and integrity checking.

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The **macsec cipher-suite** command can be used in conjunction with an encryption offset configured with the **macsec confidentiality-offset** command.

Examples

The following example enables GCM-AES-128 encryption on group test1.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# macsec cipher-suite gcm-aes-128
```

The following example enables GCM-AES-128 bit integrity checking on test1.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# macsec cipher-suite gcm-aes-128 integrity-only
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices. The command was also modified to add GCM-AES-256 encryption options.
08.0.90	Support for this command was added on ICX 7850 devices.

macsec confidentiality-offset

Configures the offset size for MACsec encryption.

Syntax

macsec confidentiality-offset *size*

no macsec confidentiality-offset *size*

Command Default

The default value for the MACsec encryption offset size is zero (0).

Parameters

size

Determines where encryption begins. Valid values are:

- 30: Encryption begins at byte 31 of the data packet.
- 50: Encryption begins at byte 51 of the data packet.

Modes

dot1x-mka-cfg-group mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The **no** form of the command disables encryption offset on all interfaces in the MACsec MKA group.

This command is only meaningful when encryption is enabled for the MACsec group using the **macsec cipher-suite** command.

Examples

The following example configures a 30-byte offset on encrypted transmissions as part of group test1 parameters.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka)# macsec cipher-suite gcm-aes-128
device(config-dot1x-mka-group-test1)# macsec confidentiality-offset 30
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices. The command was also modified to add GCM-AES-256 encryption options.

Release version	Command history
08.0.90	Support for this command was added on ICX 7850 devices.

macsec delay-protection

MACsec data-delay protection allows MKA participants to ensure that the data frames protected by MACsec are not delayed by more than two seconds.

Syntax

macsec delay-protection

no macsec delay-protection

Command Default

By default, MACsec data-delay protection is not configured.

Modes

dot1x-mka group configuration mode

Usage Guidelines

The no form of the command disables the feature.

MACsec replay protection must not be enabled when data-delay protection is enabled.

Configuring the **macsec delay-protection** command under MKA group settings and attaching the group to a MACsec interface enables the data-delay protection feature on that interface.

Examples

The following example configures data-delay protection for group test1 and applies group test1 configuration to a MACsec-enabled interface. On the interface, frames are protected when they are received with a delay of two seconds or less. The keychain macsec1 is also applied to the interface.

```
device# configure terminal
device(config)# dot1x-mka
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# macsec delay-protection
device(config-dot1x-mka-group-test1)# macsec replay-protection disable
device(config-dot1x-mka-group-test1)# exit
device(config-dot1x-mka)# enable-mka ethernet 2/2/1
device(config-dot1x-mka-2/2/1)# mka-cfg-group test1
device(config-dot1x-mka-2/2/1)# mka-keychain macsec1
device(config-dot1x-mka-2/2/1)# end
device#
```

History

Release version	Command history
09.0.10c	This command was introduced.

macsec frame-validation

Enables validation checks for frames with MACsec headers and configures the validation mode (strict or not strict).

Syntax

macsec frame-validation{**disable**|**check**|**strict**}

no macsec frame-validation{**disable**|**check**|**strict**}

Command Default

MACsec frame validation is disabled (not visible in configuration).

Parameters

disable

Disables validation checks for frames with MACsec headers.

check

Enables validation checks for frames with MACsec headers and configures non-strict validation mode. If frame validation fails, counters are incremented but packets are accepted.

strict

Enables validation checks for frames with MACsec headers and configures strict validation mode. If frame validation fails, counters are incremented and packets are dropped.

Modes

dot1x-mka-cfg-group mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The **no** form of the restores the default (validation checks for frames with MACsec headers is disabled).

Examples

The following example enables validation checks for frames with MACsec headers on group test1 and configures strict validation mode.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# macsec frame-validation strict
```

History

Release version	Command history
08.0.20	This command was introduced.

Release version	Command history
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

macsec replay-protection

Specifies the action to be taken when packets are received out of order, based on their packet number. If replay protection is configured, you can specify the window size within which out-of-order packets are allowed.

Syntax

macsec replay-protection { **strict** | **out-of-order window-size** *size* } [**disable**]

no macsec replay-protection { **strict** | **out-of-order window-size** *size* } [**disable**]

Command Default

Macsec replay protection is enabled in Strict mode by default (no out-of-order packets are allowed).

Parameters

strict

Does not allow out-of-order packets.

out-of-order window-size

Allows out-of-order packets within a specific window size.

size

Specifies the allowable window within which an out-of-order packet can be received. Allowable range is from 0 through 2147483648.

disable

Disables replay protection.

Modes

dot1x-mka-cfg-group mode

Usage Guidelines

MACsec commands are supported only on ICX 7550, ICX 7650, and ICX 7850 devices.

By default, "macsec replay-protection strict" is enabled under any mka-cfg-group; however, the default configuration is not visible in **show running-config** or **show dot1x-mka config** command output.

The **no** form of the command followed by the configured parameters disables MACsec replay protection. The alternative on all supported platforms is to use the **macsec replay-protection disable** command.

MACsec replay protection must not be enabled when MACsec delay protection is enabled.

Examples

The following example configures group test1 to accept packets in exact sequence only.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# macsec replay-protection strict
device(config-dot1x-mka-group-test1)#
```

The following example configures group test1 to accept out-of-order MACsec frames within a window size of 2000.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# macsec replay-protection out-of-order window-size 2000
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

management access

Configures access control for management protocols.

Syntax

management access { **mac** *mac-address* | **src-ip** *ipv4-address* | **src-ipv6** *ipv6-address* } { **allow** |**deny** { **all** | **log** | **snmp** | { **snmp-server** { **community** | **group** | **user** } | **name** } |**ssh** | **telnet** | **web** } }

no management access { **mac** *mac-address* | **src-ip** *ipv4-address* | **src-ipv6** *ipv6-address* } { **allow** |**deny** { **all** | **log** | **snmp** | { **snmp-server** { **community** | **group** | **user** } | **name** } | **ssh** | **telnet** | **web** } }

Command Default

By default, there are no restrictions on access for the management protocols.

Parameters

mac *mac-address*

Specifies a MAC address to which restrictions apply.

src-ip *ipv4-address*

Specifies a source IPv4 address and optional subnet mask in the form xxx.xxx.xxx.xxx (for example, 255.255.255.0) to which the restrictions apply.

src-ipv6 *ipv6-address*

Specifies an IPv6 address and optional subnet mask to which restrictions apply.

allow | **deny**

Specifies whether traffic for the protocol or protocols listed thereafter is allowed access or dropped.

all

Indicates the allow or deny action is applied to all management protocols in the list except **snmp-server**.

log

Indicates the allow or deny action is applied to log matching packets.

snmp

Indicates the allow or deny action is applied to incoming SNMP traffic for the specified address or addresses.

snmp-server { **community** | **group** | **user** } | **name**

Indicates the allow or deny action is applied to incoming SNMP server traffic for the specified address or addresses.
community: Indicates the community string.
group: Indicates the user security model group.
user: Indicates the user who can access the SNMP engine.
name: Indicates the name.

ssh

Indicates the allow or deny action is applied to incoming SSH traffic for the specified address or addresses.

telnet

Indicates the allow or deny action is applied to incoming Telnet traffic for the specified address or addresses.

web

Indicates the allow or deny action is applied to incoming HTTP traffic for the specified address or addresses.

Modes

Global configuration mode

Usage Guidelines

NOTE
Beginning in FastIron release 09.0.00, access control lists (ACLs) can no longer be applied to management protocols. Related binding commands are deprecated. The **management access** command is used instead to control incoming traffic from specific management protocols.

NOTE
The **management access snmp-server** configuration only supports source ipv4 and ipv6. It does not support MAC-based filtering.
The **snmp-server** with management access must not be combined with other protocols such as ssh, telnet, webui, and snmp. As group/user/community names are required for snmp-server but not for other protocols.

The **no** form of the command removes the **management access** command restrictions.

You can include a series of addresses of the same type or different types on a single command line.

You can include more than one type of management protocol on the same command line.

Use the **show management access** command to display configured management access restrictions for the ICX device.

Examples

The following example allows access to Telnet and SSH packets from the specified IPv4 address.

```
device# configure terminal
device(config)# management access src-ip 10.10.10.1 255.255.255.255 allow telnet ssh
```

The following example drops all management traffic (Telnet, SSH, SNMP, HTTP) from the specified MAC address.

```
device(config)# management access mac CC:4E:24:D0:8B:81 deny all
```

The following example configures management access permissions for two groups of source IPv4 addresses and a MAC address. Management access is allowed for Telnet and SSH packets.

```
device(config)# management access src-ip 10.10.10.0 255.255.255.0 src-ip 1.1.1.1 255.255.255.255 mac CC:
4E:24:D0:8B:81 allow telnet ssh
```

The following example removes management access permissions for the group of IPv4 addresses specified.

```
device(config)# no management access src-ip 10.10.10.1 255.255.255.255 allow telnet ssh
```

The following example enables SNMP server community/group/user configurations.

```
device# configure terminal
device(config)# management access src-ip 10.198.137.167 255.255.255.0 allow snmp-server community test1
device(config)# management access src-ip 10.198.137.167 255.255.255.0 allow snmp-server group test1
device(config)# management access src-ip 10.198.137.167 255.255.255.0 allow snmp-server user test1
```

History

Release version	Command history
09.0.00	This command was introduced.
09.0.10e	This command was modified to add the **snmp-server** keyword.

management exclude

Excludes in-band and out-of-band (OOB) interfaces from management traffic.

Syntax

management exclude{**all**| **http**|**ipv6ra** |**ntp** |**ssh** |**telnet** [**inband**|**oob**] }

no management exclude

Command Default

Disabled by default.

Parameters

all
Specifies ingress traffic for all applications.

http
Specifies requests for HTTP ingress connections.

ipv6ra
Specifies IPv6 ingress Router Advertisement (RA) traffic.

ntp
Specifies NTP ingress traffic.

ssh
Specifies requests for SSH ingress connections.

telnet
Specifies requests for Telnet ingress connections.

inband
Specifies in-band traffic only.

oob
Specifies OOB traffic only.

Modes

Global configuration mode

Usage Guidelines

The **management exclude** command is mutually exclusive with respect to the **telnet strict-management-vrf** command. If the **management exclude** command is also configured, outbound Telnet connections are not blocked.

The **no** form of the command removes all, one, or more, traffic types.

Examples

The following example excludes OOB traffic for all applications.

```
device# configure terminal
device(config)# management exclude all oob
```

History

Release version	Command history
08.0.50	This command was introduced.

Related Commands

telnet strict-management-vrf

management source-interface

Defines the interface to be used for the specified protocol.

Syntax

management source-interface { **ethernet** *stack-id/slot/port* | **lag** *number* | **loopback** *number* | **management** *number* | **ve** *number* }
{ **protocol** { **all** | **manager** | **ntp** | **radius** | **snmp** | **ssh** | **syslog** | **tacacs** | **telnet** | **tftp** } }

no management source-interface { **ethernet** *stack-id/slot/port* | **lag** *number* | **loopback** *number* | **management** *number* | **ve** *number* }
{ **protocol** { **all** | **manager** | **ntp** | **radius** | **snmp** | **ssh** | **syslog** | **tacacs** | **telnet** | **tftp** } }

Command Default

By default, the source interface is not enabled.

Parameters

ethernet *stack-id/slot/port*
Specifies the Ethernet interface address used for setting the source IP address.

lag *number*
Specifies the link aggregation group (LAG) interface address used for setting the source IP address.

loopback *number*
Specifies the loopback interface address used for setting the source IP address.

management *number*
Specifies the management interface address used for setting the source IP address.

ve *number*
Specifies the Virtual Ethernet (VE) interface address used for setting the source IP address.

protocol manager
Specifies the interface to be used by SmartZone ICX-Management to manage the ICX device in on-premises installations.

protocol all
Configures the source interface for all listed protocols.

protocol ntp
Configures the source IP address for Network Time Protocol (NTP) packets.

protocol radius
Configures an interface as the source IP address from which the RADIUS client sends RADIUS requests or receives responses.

protocol snmp
Configures the source IP address for Simple Network Management Protocol (SNMP).

protocol ssh
Configures the source IP address for Secure Shell (SSH) protocol.

protocol syslog
Configures an interface as the source IP address from which the syslog module sends log messages.

protocol tacacs
Configures an interface as the source IP address from which the TACACS+ client establishes connections with TACACS+ servers.

protocol telnet
Sets the lowest-numbered IP address configured on an interface as the source for all Telnet packets.

protocol tftp
Configures an interface as the source IP address from which TFTP sends and receives data and acknowledgments.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the source address of the packet as the lowest-numbered IP address on the interface that sends the packet.

You can configure an ICX Layer 3 switch so that it always uses the lowest-numbered IP address on a specific Ethernet, loopback, or virtual interface as the source address for a specific type of packet. When a source interface is configured, the Layer 3 switch uses the same IP address as the source for all packets of the specified type, regardless of the ports that actually send the packets.

If your server is configured to accept packets only from specific IP addresses, you can use this configuration to simplify configuration of the server by configuring the ICX device so that it always sends the packets from the same link or source address.

If you specify a loopback interface as the single source for specified packets, servers can receive the packets regardless of the states of individual links. Thus, if a link to the server becomes unavailable, but the client or server can be reached through another link, the client or server still receives the packets, and the packets still have the source IP address of the loopback interface.

When a management VRF is configured, the specified management protocol or application requests and receives responses only through ports belonging to the management VRF and through the out-of-band management port. When a source interface is configured, management applications use the lowest configured IP address of the specified interface as the source IP address in all the outgoing packets. If the configured interface is not part of the management VRF, the response packet does not reach the destination. If the compatibility check fails while either the management VRF or the source interface is being configured, an error message is displayed; however, the configuration command is accepted.

RADIUS

The RADIUS source interface configuration must be compatible with the management VRF configuration. Any change in the management VRF configuration takes effect immediately for the RADIUS client.

ICX-Management

The lowest IP address configured on the specified interface is sent to ICX-Management in the manager query. If there is no source interface configuration, the management IP address is sent.

The **no management source-interface protocol manager** command removes the source interface configuration and returns to the default source interface (the management port).

NTP

For NTP, the specified interface is used for the source address for all packets sent to all destinations. If a source address is to be used for a specific association, use the **source** keyword in the **peer** or **server** command.

NOTE
If the source interface is not configured, the lowest IP address in the outgoing interface will be used in the NTP packets.

Syslog

The syslog source interface configuration must be compatible with the management VRF configuration. Any change in the management VRF configuration takes effect immediately for syslog.

TACACS+

The TACACS+ source interface configuration must be compatible with the management VRF configuration.

For the TACACS+ client, a change in the management VRF configuration does not affect the existing TACACS+ connections. The changes are applied only to new TACACS+ connections.

TFTP

The TFTP source interface configuration must be compatible with the management VRF configuration.

Any change in the management VRF configuration takes effect immediately for TFTP. You cannot make changes in the management VRF configuration while TFTP is in progress.

Examples

The following example configures an Ethernet interface as the source IP address for the RADIUS client.

```
device# configure terminal
device(config)# management source-interface ethernet 1/1/1 protocol radius
```

The following example configures a loopback interface as the source IP address for the RADIUS client.

```
device(config)# management source-interface loopback 1 protocol radius
```

The following example configures an Ethernet port as the source interface for ICX-Management.

```
device(config)# management source-interface ethernet 1/1/3 protocol manager
```

The following example configures a virtual interface as the source interface for ICX-Management.

```
device(config)# management source-interface ve 10 protocol manager
```

The following example configures a management interface as the source IP address for the syslog module to send log messages.

```
device(confg)# management source-interface management 1 protocol syslog
```

The following example configures an Ethernet interface as the source IP address for the TACACS+ client to establish connections with TACACS+ servers.

```
device(config)# managment source-interface ethernet 1/1/1 protocol tacacs
```

History

Release version	Command history
09.0.00	This command was introduced. It replaces the **ip radius source-interface**, **ip syslog source-interface**, **ip tacacs source-interface**, **ip telnet source-interface**, **ip tftp source-interface**, **manager source-interface**, and **source interface** (NTP) commands.

management vrf

Configures a Virtual Routing and Forwarding (VRF) as a global management VRF.

Syntax

management vrf *vrf-name* **strict**

no management vrf *vrf-name* **strict**

Command Default

A management VRF is not configured.

Parameters

vrf-name

Specifies the name of a preconfigured VRF.

strict

Specifies management VRF strict mode.

Modes

Global configuration mode

Usage Guidelines

If the VRF is not preconfigured, command execution fails, and an error message is displayed. If you try to delete a management VRF that was not configured, the system displays an error message.

If a VRF is currently configured as the management VRF, it cannot be deleted or modified. Attempting to do so causes the system to return an error message. If a management VRF is already configured, you must remove the configuration before configuring a new one.

The **no** form of the command removes the management VRF. When the management VRF is deleted, a syslog message is displayed.

Examples

The following example configures a management VRF.

```
device# configure terminal
device(config)# management vrf mvrf
```

The following example configures a strict management VRF.

```
device# configure terminal
device(config)# management vrf red strict
```

History

Release version	Command history
09.0.00	This command was introduced.

manager active-list

Configures the ICX-manager IP addresses that the ICX device uses to initiate a connection with the ICX-Manager.

Syntax

manager active-list{*ip-address*}[*ip-address2*][*ip-address3*]

no manager active-list{*ip-address*}[*ip-address2*][*ip-address3*]

Command Default

ICX-Manager IP addresses are not configured on the ICX device, which means the ICX device attempts to initiate a connection with the ICX-Manager using the ICX-Manager IP addresses provided through DHCP Option 43.

Parameters

ip-address
: The first ICX-Manager IP address to which the ICX device attempts to connect.

ip-address2
: ICX-Manager IP address that the ICX device attempts to connect with if the first address does not work.

ip-address3
: ICX-Manager IP address that the ICX device attempts to connect with if the first two addresses do not work.

Modes

Global configuration mode

Usage Guidelines

Use the no form of the **manager active-list** command to remove the ICX-Manager IP addresses. Use the **no manager active-list** command with one IP address to remove only that address. To remove the entire list, use the **no manager active-list** command followed by the entire list.

The ICX device attempts to connect to the ICX-Manager by sending a query to the ICX-Manager IP addresses in the following order:

- switch registrar - IP address or fully qualified domain name (FQDN) received from the switch registrar (if enabled)
- active-list - ICX-Manager IP addresses configured on the ICX device using the **manager active-list** command
- DHCP - ICX-Manager IP addresses received through DHCP Option 43
- backup-list - ICX-Manager backup IP addresses configured on the ICX device using the **manager backup** command

Both "active" and "backup" ICX-Manager IP addresses can be configured on the ICX device. Active IP addresses are given the highest priority; backup IP addresses are lower priority and are provided for redundancy.

If the ICX-Manager active-list IP addresses are both configured on the ICX device and provided by DHCP Option 43, the configured list on the ICX device takes priority over DHCP Option 43. If none of the IP addresses in the configured list are reachable, the ICX device tries to reach the addresses received by DHCP Option 43.

Examples

The following example configures three active ICX-Manager IP addresses. The ICX device attempts to create a connection beginning with the first IP address. If the attempt fails, the ICX device moves to the second and then the third IP address.

```
device# configure terminal
device(config)# manager active-list 192.168.11.200 192.168.11.201 192.168.11.202
```

The following example removes a single IP address from the configured active-list.

```
device# configure terminal
device(config)# no manager active-list 192.168.11.202
```

The following example removes the entire active-list.

```
device# configure terminal
device(config)# no manager active-list 192.168.11.200 192.168.11.201 192.168.11.202
```

History

Release version	Command history
08.0.80	This command was introduced as **sz active-list**.
08.0.92	The name of the command was changed to **manager active-list**.

manager backup

Configures lower priority ICX-manager IP addresses that the ICX device uses to initiate a connection with the ICX-Manager if higher priority IP addresses fail.

Syntax

manager backup{*ip-address*}[*ip-address2*][*ip-address3*]

no manager backup{*ip-address*}[*ip-address2*][*ip-address3*]

Command Default

ICX-Manager IP addresses are not configured on the ICX device, which means the ICX device attempts to initiate a connection with the ICX-Manager using the ICX-Manager IP addresses provided through DHCP Option 43.

Parameters

ip-address
The first of the backup ICX-Manager IP addresses through which the ICX device attempts to connect.

ip-address2
ICX-Manager IP address through which the ICX device attempts to connect if the first backup address does not work.

ip-address3
ICX-Manager IP address through which the ICX device attempts to connect if the first two backup addresses do not work.

Modes

Global configuration mode

Usage Guidelines

Use the no form of the **manager backup** command to remove the backup ICX-Manager IP addresses. Use the **no manager backup** command with one IP address to remove only that address. To remove the entire list, use the **no manager backup** command followed by the entire list.

The ICX device attempts to connect to the ICX-Manager by sending a query to the ICX-Manager IP addresses in the following order:

- switch registrar - IP address or fully qualified domain name (FQDN) received from the switch registrar (if enabled)
- active-list - ICX-Manager IP addresses configured on the ICX device using the **manager active-list** command
- DHCP - ICX-Manager IP addresses received through DHCP Option 43
- backup-list - Backup ICX-Manager IP addresses configured on the ICX device using the **manager backup** command

Both "active" and "backup" ICX-Manager IP addresses can be configured on the ICX device. Active IP addresses are given the highest priority; backup IP addresses are lower priority and are provided for redundancy.

If the ICX-Manager IP addresses are both configured on the ICX device and provided by DHCP Option 43, the configured list on the ICX device takes priority over DHCP Option 43. If none of the IP addresses in the configured list are reachable, the ICX device tries to reach the addresses received through DHCP Option 43.

Examples

The following example configures three backup ICX-Manager IP addresses.

```
device# configure terminal
device(config)# manager backup 192.168.11.200 192.168.11.201 192.168.11.202
```

The following example removes a single IP address from the configured list.

```
device# configure terminal
device(config)# no manager backup 192.168.11.202
```

The following example removes the entire list of backup IP addresses.

```
device# configure terminal
device(config)# no manager backup 192.168.11.200 192.168.11.201 192.168.11.202
```

History

Release version	Command history
08.0.80	This command was introduced as **sz passive**.
08.0.92	The command name was changed to **manager passive**.
08.0.95b	The command name was changed to **manager backup**.

manager connect

Connects the ICX device to the ICX-manager.

Syntax

manager connect

Modes

Privileged EXEC mode

Usage Guidelines

When an ICX device is managed from the cloud, Ruckus recommends that the **manager connect** and **manager disconnect** commands be used to connect to and disconnect from the ICX-Manager. These two commands, entered in Privileged EXEC mode, do not change the running configuration timestamp, which the ICX-Manager uses to determine whether any configuration changes have been made on the ICX device.

Examples

The following example connects an ICX device to the ICX-Manager.

```
device# manager connect
```

History

Release version	Command history
08.0.92	This command was introduced.

manager disable

Disables cloud management of the ICX device.

Syntax

manager disable

no manager disable

Modes

Global configuration mode

Usage Guidelines

Use the no form of the **manager disable** command to reenable cloud management of the ICX device after it has been disabled.

When an ICX device is managed from the cloud, Ruckus recommends that the **manager connect** and **manager disconnect** commands be used to connect to and disconnect from the ICX-Manager. These two commands, entered in Privileged EXEC mode, do not change the running configuration timestamp, which the ICX-Manager uses to determine whether any configuration changes have been made on the ICX device.

Examples

The following example disables cloud management of the ICX device.

```
device# configure terminal
device(config)# manager disable
```

History

Release version	Command history
08.0.80	This command was introduced as **sz disable**.
08.0.92	The command name was changed to **manager disable**.

manager disconnect

Disconnects the ICX device from the ICX-Manager.

Syntax

manager disconnect

Modes

Privileged EXEC mode

Usage Guidelines

When an ICX device is managed from the cloud, Ruckus recommends that the **manager connect** and **manager disconnect** commands be used to connect to and disconnect from the ICX-Manager. These two commands, entered in Privileged EXEC mode, do not change the running configuration timestamp, which the ICX-Manager uses to determine whether any configuration changes have been made on the ICX device.

Ruckus recommends that the **manager disconnect** command be entered only from the local terminal or using an SSH or a direct Telnet connection (not through the reverse SSH tunnel).

In an on-premises ICX-Manager implementation, the **manager disconnect** command is used to bounce the connection to SmartZone.

Examples

The following example disconnects the ICX device from the ICX-Manager.

```
device# manager disconnect
Manager Disconnect initiated…
```

History

Release version	Command history
08.0.80	This command was introduced as **sz disconnect**.
08.0.92	The command name was changed to **manager disconnect**. The command function was modified to disconnect ICX devices from the cloud.

manager network-config

Launches the ICX-Management configuration wizard.

Syntax

manager network-config

Modes

Privileged EXEC mode

Usage Guidelines

If a static IP address is to be used, a system administrator can use the wizard to configure the needed network configurations on the out-of-factory ICX device.

Examples

The following example shows the ICX-Management configuration wizard and user entries for the static IP address, network mask, gateway IP address, and DNS server IP address.

```
device# manager network-config
Please enter IP address: 10.10.10.10
Please enter network mask: 255.255.255.128
Please enter gateway IP address: 10.10.10.1
Please enter DNS server IPs: 8.8.8.8
After the wizard is run, the corresponding running configuration will be sent to vSZ via a new json
parameter in the SZ query:
"initialCli" : "vlan 1
router-interface ve 1
interface ve 1
ip address 10.10.10.10 255.255.255.128
ip dns server-address 8.8.8.8
ip route 0.0.0.0/0 10.10.10.1"
```

History

Release version	Command history
08.0.92	This command was introduced.

manager port-list

Configures the destination port that the ICX device uses to connect to the ICX-Manager.

Syntax

manager port-list *port-number*

no manager port-list *port-number*

Command Default

The destination port is port 443 by default when the ICX-Manager is non-FIPs enabled. The destination port is 987 when the ICX-Manager is FIPs enabled.

Parameters

port-number

Specifies the destination port.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command restores the default.

Examples

The following example removes the default for a FIPs enabled ICX-Manager.

```
device# configure terminal
device(config)# no manager port-list 987
```

The following example restores the default for a FIPs enabled ICX-Manager.

```
device# configure terminal
device(config)# manager port-list 987
```

Release version	Command history
08.0.90	This command was introduced as **sz port-list**.
08.0.92	The name of the command was changed to **manager port-list**.

manager query

Initiates a query to a specific ICX-Manager IP address if the ICX-Manager is not yet connected.

Syntax

manager query *ip-address*

Command Default

A query is not initiated.

Modes

Privileged EXEC mode

Parameters

ip-address

The ICX-Manager IP address to which the troubleshooting query is sent.

Usage Guidelines

The **manager query** command is used for troubleshooting. The command can be used only when the ICX switch is already connected or when the ICX-Manager is in a disabled state. If the ICX switch is already in the process of connecting to the ICX-Manager, the **manager query** command does not work.

Examples

The following example shows a query sent by an ICX device.

```
device> manager query 104.198.196.69
Sending TA Request to IP: 104.198.196.69 Request POST URL: /switchm/api/v1/switch/auth/DUH3827L069
Response might take up to few mins...
Mar 29 22:41:32 Initiating HTTP POST Request...
Mar 29 22:41:38 HTTP Request Succeed for Request ID: 2. Response Code: 200
Received Buffer:
    <Received JSON Payload>
```

History

Release version	Command history
08.0.80	This command was introduced as **sz query**.
08.0.92	The command name was changed to **manager query**.

manager registrar

Allows an administrator to override the default registrar host used in registrar-based ICX-Manager discovery.

Syntax

manager registrar *hostname*

no manager registrar *hostname*

Command Default

The default registrar host is sw-registrar.ruckuswireless.com.

Parameters

hostname

Name of the registrar host in ASCII format.

Modes

Global configuration mode

Usage Guidelines

NOTE
This command is intended for testing purposes only.

The default registrar host is sw-registrar.ruckuswireless.com.

Use the **no** form of this command to disable registrar-based ICX-Manager discovery.

Examples

The following example shows how to specify local-registrar.example.com as the registrar host.

```
device# configure terminal
device(config)# manager registrar local-registrar.example.com
```

The following example disables registrar-based ICX-Manager discovery.

```
device# configure terminal
device(config)# no manager registrar sw-registrar.ruckuswireless.com
```

History

Release version	Command history
08.0.80c	This command was introduced as **sz registrar**.
08.0.92	The command name was changed to **manager registrar**.

manager registrar-list

Used only in the no form, allows administrators to clear addresses learned via the switch registrar from the ICX-Manager node list.

Syntax

no manager registrar-list { *ip-address* } [*ip-address*]

Parameters

ip-address

Specifies an IP addressed learned via the ICX-Manager registrar.

Modes

Global configuration mode

Usage Guidelines

Only the **no** form of the command is valid on ICX devices. The **no** form of the command clears the specified IP address from the ICX-Manager registrar list.

Examples

The following example clears the entry for IP address 8.8.01 from the list of ICX-Manager IP addresses learned by the Ruckus switch registrar.

```
device(config)# no manager registrar-list 8.8.0.1
```

History

Release version	Command history
08.0.80c	This command was introduced as **sz registrar-list**.
08.0.92	The command name was changed to **manager registrar-list**.

manager registrar-query-restart

Allows administrators to force start ICX-Manager discovery on ICX devices through the ICX-Manager registrar.

Syntax

manager registrar-query-restart

Modes

Privileged EXEC mode

Examples

The following example force starts the ICX-Manager discovery process on an ICX device.

```
device# manager registrar-query-restart
```

History

Release version	Command history
08.0.80c	This command was introduced as **sz registrar-query-restart**.
08.0.92	The command name was changed to **manager registrar-query-restart**.

manager reset

Bounces the connection between an ICX device and the ICX-Manager.

Syntax

manager reset

Modes

Privileged EXEC mode

Usage Guidelines

The **manager reset** command is ignored if the ICX-Manager is disabled.

Examples

The following example disconnects and reconnects the single connection between the ICX device and the ICX-Manager.

```
device# manager reset
```

History

Release version	Command history
08.0.80	This command was introduced as **sz reset**.
08.0.92	The name of this command was changed to **manager reset**.

manager ssh-port

Specifies the SSH port for an ICX-Management connection over the reverse SSH tunnel.

Syntax

manager ssh-port { *port-number* }

no manager ssh-port { *port-number* }

Command Default

By default, the SSH port number used to establish an ICX-Management connection is port 22.

Parameters

port-number

Specifies the SSH port number, which must be a valid decimal value.

Modes

Global configuration mode

Usage Guidelines

If an ICX-Management session is established when you configure an SSH port, the session is dropped, and a new session using the new port number is established. A warning message to this effect is displayed when you use the **manager ssh-port** command, and you are prompted to confirm. You must confirm for the new configuration to take effect.

If you configure a custom port for connection to SmartZone, the SmartZone controller settings must also be updated. Refer to the appropriate SmartZone administration guide for details.

Use the **show manager status** command to check the SSH port configuration.

The **no** form of the command removes the configuration.

Examples

The following example configures port 25 as the SSH port used to establish an ICX-Management connection.

```
device# configure terminal
device(config)# manager ssh-port
  DECIMAL   Enter a decimal value (Default 22)
device(config)# manager ssh-port 25

device(config)# manager ssh-port 25  <-- Warning message -->
Current session if established will be dropped to establish a new session with port 25.
Are you sure? (enter 'y' or 'n'): y  <-- You must confirm the configuration.
!
!
device(config)# exit
```

The **show manager status** command can be used to check the **manager ssh-port** configuration.

```
device# show manager status

============    MGMT Agent State Info     ===================

Config Status:Enabled Operation Status:Enabled
State:SSH CONNECTED     Prev State:SSH CONNECTING       Event:SZ_SSH_CONNECT_EVENT

SWR List                : None
DNS List                :
Active List             : 10.176.160.115
Active List IPV6        : None
DHCP Option 43          : No
DHCP Opt 43 List        : None
Backup List             : None
Backup List IPV6        : None
Merged List             : 10.176.160.115

SZ IP Used              : 10.176.160.115
Port List               : 987
Server Port Used        : 443
Query Status            : APPROVED

SSH Tunnel Status -:
Tunnel Status           : Established
SSH Port                : 25          <-- configuration confirmed
CLI IP/Port             : 127.255.255.253/22866
SNMP IP/Port            : 127.255.255.254/63989
Syslog IP/Port          : 127.0.0.1/20514
HTTP CLIENT IP/Port     : 127.0.0.1/5080
HTTP SERVER IP/Port     : 127.255.255.252/40042
Timer Status            : Not Running
```

History

Release version	Command history
09.0.10a	This command was introduced.

map vlan (VXLAN)

Maps VLAN to a VNI for a VXLAN overlay-gateway.

Syntax

map vlan *vlan-id* **to VNI** *vni-id*

no map vlan *vlan-id* **to VNI** *vni-id*

Command Default

VLAN to VNI is not mapped.

Parameters

vlan-id

Identifies the VLAN to map to the VNI.

vni-id

Identifies the VXLAN Network Identifier (or VXLAN segment ID).

Modes

Overlay-gateway configuration mode

Usage Guidelines

The command is supported only on ICX 7650 and ICX 7850 devices.

A maximum of 256 VLAN-to-VNI mappings can be configured.

The designated VLAN must already have been configured.

The default VLAN, VLAN 1, unless the default is reconfigured, cannot be mapped to a VNI.

A VLAN with multicast snooping enabled cannot be mapped to a VNI.

A VLAN with a router interface cannot be mapped to a VNI.

A VLAN cannot be mapped to more than one VNI.

Multiple VLANs cannot be mapped to the same VNI.

The **no** form of the command removes the VLAN to VNI mapping.

Examples

The following example maps VLAN 2 to VNI 3.

```
device# configure terminal
device(config)#overlay-gateway gate1
device(config-overlay-gate1)# type layer2-extension
device(config-overlay-gw-gate1)# map vlan 2 to vni 3
```

History

Release version	Command history
08.0.70	This command was introduced.

map vlan to vni

Maps a VLAN you intend to extend over the VXLAN segment (that is, over the overlay gateway) to a VXLAN Network Identifier (VNI).

Syntax

map vlan *vlan-id* **to vni** *vni-id* [**cross-connect**]

no map vlan *vlan-id* **to vni** *vni-id* [**cross-connect**]

Command Default

A VLAN is not mapped to the VNI by default.

Parameters

vlan-id

Specifies the VLAN you intend to extend over the VXLAN.

vni-id

Specifies the VXLAN Network Identifier (VNI) to be mapped to the VLAN.

cross-connect

Disbles MAC learning on the VNI and provides point-to-point Layer 2 extensions across the LAN/WAN.

Modes

Overlay-gateway configuration mode

Usage Guidelines

The default VLAN cannot be mapped to a VNI.

Only one-to-one mapping is allowed between the VLAN and the VNI.

None of the ports on the VLAN mapped to the VNI can have a configured IP address.

You cannot change non-cross-connect VNIs to cross-connect VNIs and vice versa.

Deleting VLAN-to-VNI mapping does not mandate the cross-connect option for cross-connect VNIs.

The **no** form of the command disables VLAN-to-VNI mapping.

Examples

The following example maps VLAN 2 to cross-connect VNI 3.

```
device(config)#overlay-gateway gate1
device(config-overlay-gw-gate1)#map vlan 2 to vni 3 cross-connect
```

History

Release version	Command history
09.0.10	This command was modified to add the **cross-connect** option.

master

Configures the device as a Network Time Protocol (NTP) master clock to which peers synchronize themselves when an external NTP source is not available.

Syntax

master [**stratum** *number*]

no master [**stratum** *number*]

Command Default

The master clock is disabled by default.

Parameters

stratum *number*

Specifies the NTP stratum number that the system will claim. The number can range from 2 to 15. The default value is 8.

Modes

NTP configuration mode

Usage Guidelines

Local time and time zone have to be configured before configuring the **master** command.

Use the **master** command with caution. It is very easy to override valid time sources using this command, especially if a low stratum number is configured. Configuring multiple machines in the same network with the **master** command can cause instability in timekeeping if the machines do not agree on the time.

NOTE
This command is not effective if NTP is enabled in client-only mode.

The **no** form of the command disables the master clock function.

Examples

The following example configures the NTP master clock.

```
device(config)# ntp
device(config-ntp)# master stratum 5
```

master (MRP)

Configures a node as the master node for the metro ring.

Syntax

master

no master

Command Default

A master node is not configured.

Modes

MRP configuration mode

Usage Guidelines

The **no** form of the command returns a master node a normal node.

Any node on a metro ring that does not have a shared interface can be designated as the ring master node. A master node can be the master node of more than one ring. However, if all nodes on the ring have shared interfaces, a node that does not have tunnel ports can be designated as the master node of that ring. If none of the nodes meet these criteria, you must change the priorities of the ring by reconfiguring the ring ID.

Examples

The following example shows how to set a node as a master node.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-1)# name CustomerA
device(config-vlan-2-mrp-1)# master
device(config-vlan-2-mrp-1)# ring-interface ethernet 1/1/1 ethernet 1/1/2
device(config-vlan-2-mrp-1)# enable
```

master-vlan

Adds the master VLAN to the topology group.

Syntax

master-vlan *vlan-id*

no master-vlan *vlan-id*

Command Default

A master VLAN is not configured.

Parameters

vlan-id

Specifies the VLAN ID of the master VLAN.

Modes

Topology group configuration mode

Usage Guidelines

To configure a master VLAN, the VLAN must already be configured. Make sure all the Layer 2 protocol settings in the VLAN are correct for your configuration before you add the VLAN to the topology group. A topology group can have only one master VLAN. If you add a new master VLAN to a topology group that already has a master VLAN, the new master VLAN replaces the older master VLAN. All member VLANs and VLAN groups follow the Layer 2 protocol settings of the new master VLAN.

If you remove the master VLAN (by entering the **no master-vlan** command), the software selects the new master VLAN from member VLANs. A new candidate master VLAN is configured as a member VLAN so that the first added member VLAN will be a new candidate master VLAN. Once you save and reload, a member VLAN with the youngest VLAN ID will be the new candidate master. The new master VLAN inherits the Layer 2 protocol settings of the older master VLAN.

When removing the master VLAN from the topology group, Spanning Tree Protocol (STP) must be disabled on the master VLAN.

The **no** form of the command removes the master VLAN from the topology group.

Examples

The following example adds the master VLAN 2 to the topology group 2.

```
device(config)# topology-group 2
device(config-topo-group-2)# master-vlan 2
```

master-vlan (STP)

Adds the master VLAN to an STP group.

Syntax

master-vlan *vlan-id*

no master-vlan *vlan-id*

Command Default

The master VLAN is not configured.

Parameters

vlan-id

Specifies the VLAN ID of the master VLAN.

Modes

STP group configuration mode

Usage Guidelines

To configure a master VLAN, the VLAN must already be configured. The master VLAN contains the STP settings for all the VLANs in the STP per VLAN group. An STP group can have only one master VLAN. If you add a new master VLAN to an STP group that already has a master VLAN, the new master VLAN replaces the older master VLAN.

If you remove the master VLAN (by entering the **no master-vlan** command), the software selects the new master VLAN from member VLANs. A new candidate master VLAN will be in configured as a member VLAN so that the first added member VLAN will be a new candidate master VLAN. Once you save and reload, a member VLAN with the youngest VLAN ID will be the new candidate master.

The **no** form of the command removes the master VLAN from the STP group.

Examples

The following example adds the master VLAN 2 to the STP group 2.

```
device# configure terminal
device(config)# stp-group 2
device(config-stp-group-2)# master-vlan 2
```

match address-local

Configures matching an Internet Key Exchange version 2 (IKEv2) policy based on a local IPv4 or IPv6 address.

Syntax

match address-local { *ip-address ip-mask* | *ipv6-address ipv6mask* }

no match address-local { *ip-address mask* | *ipv6-address mask* }

Command Default

The IKEv2 policy matches all local IPv4 or IPv6 addresses.

Parameters

ip-address ip-mask
: Specifies a local IPv4 address and mask.

ip-address ipv6-mask
: Specifies a local IPv6 address and mask.

Modes

IKEv2 policy configuration mode

Usage Guidelines

The **no** form of the command restores the default value of the policy matching all local IPv4 or IPv6 addresses.

Examples

The following example configures an IKEv2 policy named pol-mktg to use an IKEv2 proposal named prop-mktg and match the local IPv4 address 10.3.3.3 255.255.255.0.

```
device# configure terminal
device(config)# ikev2 policy pol-mktg
device(config-ike-policy-pol-mktg)# proposal prop-mktg
device(config-ike-policy-pol-mktg)# match address-local 10.3.3.3 255.255.255.0
device(config-ike-policy-pol-mktg# exit
```

The following example configures an IKEv2 policy named al2 to use an IKEv2 proposal and match the local IPv6 address 2001:100::1/64.

```
device# configure terminal
device(config)# ikev2 policy al2
device(config-ike-policy-al2)# proposal al2
device(config-ike-policy-al2)# match address-local 2001:100::1/64
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support was added for IPv6.

match as-path

Matches a BGP autonomous system path (AS-path) ACL in a route map instance.

Syntax

match as-path *aspath-name ...*

no match as-path *aspath-name*

Command Default

By default, match statements are not configured.

Parameters

aspath-name

Specifies an AS-path access list.

Modes

Route-map configuration mode

Usage Guidelines

You can specify up to five AS-path ACLs.

The **no** form of the command removes the configuration.

Examples

The following example configures a route map that matches based on AS-path “myas-path”.

```
device# configure termnial
device(config)# route-map myroutemap permit 1
device(config-routemap myroutemap)# match as-path myas-path
```

match community

Matches a BGP community access list name in a route-map instance.

Syntax

match community *name* [**name ...**] [**exact-match**]

no match community *name* [**name ...**] [**exact-match**]

Command Default

By default, match statements are not configured.

Parameters

name

Specifies a BGP community access list name.

exact-match

Specifies that an exact match is required.

Modes

Route-map configuration mode

Usage Guidelines

The **no** form of the command removes the configuration.

Examples

The following example configures a route map that matches BGP community access list name “abccommunity”.

```
device# configure termnial
device(config)# route-map myroutemap permit 1
device(config-routemap myroutemap)# match community abccommunity
```

match fvrf

Configures matching an Internet Key Exchange version 2 (IKEv2) policy based on a front-door virtual routing forwarding (fvrf) instance.

Syntax

match fvrf { **vrf-name** *vrf* | **any** }

no match fvrf { **vrf-name** *vrf* | **any** }

Command Default

An IKEv2 policy matches any VRF.

Parameters

vrf-name *vrf*

Specifies matching a specific VRF.

any

Specifies matching any VRF.

Modes

IKEv2 policy configuration mode

Usage Guidelines

The **no** form of the command removes the specified forwarding VRF configuration.

Examples

The following example shows how to create an IKEv2 policy named pol-mktg and configure it to use IKEv2 proposal prop-mktg and to match the policy based on a front-door VRF named mktg-vrf.

```
device(config)# ikev2 policy pol-mktg
device(config-ike-policy-pol-mktg)# proposal prop-mktg
device(config-ike-policy-pol-mktg)# match fvrf vrf-name mktg-vrf
device(config-ike-policy-pol-mktg# exit
```

History

Release version	Command history
08.0.50	This command was introduced.

match interface

Configures the interface match clause in a route-map instance.

Syntax

match interface { **ethernet** *stackid /slot/port* | **loopback** *num* | **null0** | **tunnel** *number* | **ve** *vlan-id* } **...**

no match interface { **ethernet** *stackid /slot/port* | **loopback** *num* | **null0** | **tunnel** *number* | **ve** *vlan-id* } **...**

Parameters

ethernet *stackid slot port*
: Specifies an Ethernet interface with stackid, slot,and port numbers.

loopback *num*
: Specifies a loopback interface.

null0
: Specifies a loopback interface.

tunnel *num*
: Specifies a tunnel.

ve *vlan-id*
: Specifies a virtual Ethernet interface.

Modes

Route-map configuration mode

Usage Guidelines

A maximum of five interfaces is supported. There is no restriction on the number or type of each interface specified, as long as the total is less than or equal to five. The **no** form of the command removes the configuration.

Examples

The following example configures a route map based on matching Ethernet interfaces 1/1/3 to 1/1/7.

```
device configure terminal
device(config)# route-map myroutemap permit 10
device(config-routemap myroutemap)# match interface ethernet 1/1/3 ethernet 1/1/7
```

match ip address

Matches IP address conditions in a route map instance.

Syntax

match ip address{*acl-name*|*acl-num*}

match ip addressprefix-list*name*

no match ip address{*acl-name*|*acl-num*}

no match ip addressprefix-list*name*

Command Default

By default, match statements are not configured.

Parameters

acl-name
Specifies an IPv4 ACL name.

acl-num
Specifies an IPv4 ACL number. Valid values range from 1 through 199.

prefix-list*name*
Specifies an IPv4 prefix list.

Modes

Route-map configuration mode

Usage Guidelines

You can specify up to five ACL names or ACL numbers. You can specify up to five IPv4 prefix lists

The **no** form of the command removes the configuration.

Examples

The following example configures a route map that matches the standard ACL number 99.

```
device# configure terminal
device(config)# route-map test-route permit 99
device(config-routemap test-route)# match ip address 99
```

The following example configures a route map that matches the IPv4 prefix list “myprefixlist”.

```
device# configure terminal
device(config)# route-map test-route permit 99
device(config-routemap test-route)# match ip address prefix-list myprefixlist
```

match ipv6 address

Matches IPv6 address conditions in a route map instance.

Syntax

match ipv6 address *acl-name*

match ipv6 address prefix-list *prefix-list-name*

no match ipv6 address *acl-name*

no match ipv6 address prefix-list *prefix-list-name*

Command Default

By default, match statements are not configured.

Parameters

acl-name
Specifies an IPv6 ACL name.

prefix-list *prefix-list-name*
Specifies the name of an IPv6 prefix list.

Modes

Route-map configuration mode

Usage Guidelines

You can specify up to five ACL names. You can specify up to five IPv6 prefix lists

The **no** form of the command removes the **match ipv6 address** entry.

Examples

The following example matches IPv6 routes that have addresses specified by the prefix list named “myprefixlist”.

```
device# configure terminal
device(config)# route-map extComRmap permit 10
device(config-route-map extComRmap)# match ipv6 address prefix-list myprefixlist
```

match-identity

Configures match options for an Internet Key Exchange version 2 (IKEv2) profile based on local or remote identity parameters.

Syntax

match-identity local { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

match-identity remote { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

no match-identity local { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

no match-identity remote { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

Command Default

A match identity is not configured.

Parameters

local
Specifies matching based on local identity.

address *ip-address*
Specifies matching based on a specific IPv4 address.

address *ipv6-address*
Specifies matching based on a specific IPv6 address.

dn *fqdn-name*
Specifies matching based on a specific Distinguished Name (DN).

email *email-address*
Specifies matching based on a specific email address.

fqdn *fqdn-name*
Specifies matching based on a specific fully qualified domain name (FQDN).

key-id *key-id*
Specifies matching based on a specific key ID.

remote
Specifies matching based on remote identity.

Modes

IKEv2 profile configuration mode

Usage Guidelines

An IKEv2 profile must contain an identity to match. When a match identity is not configured, the profile is considered incomplete and is not used. An IKEv2 profile can have more than one match identity. When multiple match statements of the same type are configured, a match occurs when any statement is matched.

The **no** form of the command removes the specified match identity configuration.

Examples

The following example shows how to configure two match identities for an IKEv2 profile named prof-mktg, which is matched when the local IP address is 10.3.3.3. or the remote IP address is 10.2.2.1.

```
device# configure terminal
device(config)# ikev2 profile prof-mktg
device(config-ike-profile-prof-mktg)# match-identity local address 10.3.3.3
device(config-ike-profile-prof-mktg)# match-identity remote address 10.2.2.1
device(config-ike-profile-prof-mktg)# exit
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support was added for IPv6.

match metric

Matches a route metric in a route-map instance.

Syntax

match metric *value*

no match metric *value*

Command Default

By default, match statements are not configured.

Parameters

value

Matches a route metric for the route-map instance.

Modes

Route-map configuration mode

Usage Guidelines

The **no** form of the command removes the configuration.

Examples

The following example configures a metric that matches on the specified value.

```
device# configure terminal
device(config)# route-map test-route permit 99
device(config-routemap test-route)# match metric 1000
```

match protocol

Matches the routes on protocol types and subtypes in a route-map instance.

Syntax

match interface { **bgp** [**external** | **internal** | **static-network**] | **rip** | **static** }

no match interface { **bgp** [**external** | **internal** | **static-network**] | **rip** | **static** }

Parameters

bgp
Matches BGP routes.

external
Matches eBGP routes.

internal
Matches iBGP routes.

static-network
Matches BGP static routes.

rip
Matches RIP routes.

static
Matches static routes.

Modes

Route-map configuration mode

Usage Guidelines

The **no** form of the command removes the configuration.

Examples

The following example configures the RIP protocol as a matching criterion for a route-map instance.

```
device configure terminal
device(config)# route-map myroutemap permit 10
device(config-routemap myroutemap)# match protocol rip
```

match route-type

Configures the route type clause in a route-map instance.

Syntax

match route-type { **external-type1** | **external-type2** | **internal** }

no match route-type { **external-type1** | **external-type2** | **internal** }

Parameters

internal

Specifies OSPF internal intra or inter type routes.

external-type1

Specifies OSPF external type 1 routes.

external-type2

Specifies OSPF external type 2 routes.

Modes

Route-map configuration mode

Usage Guidelines

The **no** form of the command removes the configuration.

Examples

The following example configures OSPF external type 1 routes as a matching criterion for a route-map instance.

```
device# configure terminal
device(config)# route-map myroutemap permit 10
device(config-routemap myroutemap)# match route-type external-type1
```

match tag

Matches a route tag in a route-map instance.

Syntax

match tag *value*

no match tag *value*

Parameters

value

Specifies a route tag and route tag value. Valid values range from 0 through 4294967294.

Modes

Route-map configuration mode

Usage Guidelines

A maximum of 8 tags can be configured.

The **no** form of the command removes the configuration.

Examples

The following example specifies a route tag value of 6 as a matching criterion for a route-map instance.

```
device# configure terminal
device(config)# route-map myroutemap permit 10
device(config-routemap myroutemap)# match tag 6
```

max-hw-age

Enables and configures the maximum hardware age for denied MAC addresses.

Syntax

max-hw-age *age*

no max-hw-age *age*

Command Default

The default hardware aging time is 70 seconds.

Parameters

age

Specifies the maximum hardware age in seconds. The possible values range from 1 to 65535 seconds.

Modes

Authentication mode

Usage Guidelines

Once the hardware aging period ends, the blocked MAC address ages out, and can be authenticated again if the device receives traffic from the MAC address.

The **no** form of this command disables maximum hardware age.

Examples

The following example enables maximum hardware age and sets it to 160 seconds.

```
device(config)# authentication
device(config-authen)# max-hw-age 160
```

History

Release version	Command history
08.0.20	This command was introduced.

max-mcache

Configures the maximum number of PIM cache entries.

Syntax

max-mcache *num*

no max-mcache *num*

Command Default

If this command is not configured, the maximum value is determined by the **system max pim-hw-mcache** command or by available system resources.

Parameters

num

Specifies the maximum number of multicast cache entries for PIM. Valid values range from 1 through 12288. The default is 12288.

Modes

PIM router configuration mode

PIM router VRF mode

Usage Guidelines

Configure the **max-mcache** command to define the maximum number of repeated cache entries for PIM traffic being sent from the same source address and being received by the same destination address. To define this maximum for the default VRF, configure the command in router PIM configuration mode; to define the maximum for a specific VRF, first configure the **router pim vrf** command.

The **no** form of the command restores the default.

Examples

The following example configures the maximum number of PIM cache entries for the default VRF to 999.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# max-mcache 999
```

The following example configures the maximum number of PIM cache entries for VRF green to 888.

```
device# configure terminal
device(config)# router pim vrf green
device(config-pim-router-vrf-green)# max-mcache 88
```

max-metric router-lsa (OSPFv2)

Advertises the maximum metric value in different Link State Advertisements (LSAs).

Syntax

max-metric router-lsa [**all-lsas**] [**all-vrfs**] [**external-lsa** *metric-value*] [**link** { **all** | **ptp** | **stub** | **transit** }] [**on-startup** { *time* | **wait-for-bgp** }] [**summary-lsa** *metric-value*] [**te-lsa** *metric-value*]

no max-metric router-lsa [**all-lsas**] [**all-vrfs**] [**external-lsa** *metric-value*] [**link** { **all** | **ptp** | **stub** | **transit** }] [**on-startup** { *time* | **wait-for-bgp** }] [**summary-lsa** *metric-value*] [**te-lsa** *metric-value*]

Parameters

all-lsas

Sets the **external-lsa**, **summary-lsa**, and **te-lsa** optional parameters to the corresponding default max-metric value.

all-vrfs

Applies the configuration change to all instances of OSPFv2.

external-lsa *metric-value*

Configures the maximum metric value for all external type-5 and type-7 LSAs. The range for metric value is 1 through 16777214 (0x00001 - 0x00FFFFFE), and the default is 16711680 (0x00FF0000).

link

Specifies the types of links for which the maximum metric is advertised. By default, the maximum metric is advertised only for transit links.

all

Advertises the maximum metric in Router LSAs for all supported link types.

ptp

Advertises the maximum metric in Router LSAs for point-to-point links.

stub

Advertises the maximum metric in Router LSAs for stub links.

transit

Advertises the maximum metric in Router LSAs for transit links. This is the default link type.

on-startup

Specifies the advertisement of the maximum metric for a limited period only, on startup.

time

Sets the time (in seconds) for which the specified links in Router LSAs are advertised when the metric is set to the maximum value of 0xFFFF. The range for *time* is 5 through 86400.

wait-for-bgp

Specifies that the maximum metric is advertised until BGP converges, or for 600 seconds.

summary-lsa *metric-value*

Configures the maximum metric value for all summary type 3 and type 4 LSAs. The range for metric value is 1 through 16777214 (0x00001 - 0x00FFFFFE), and the default is 16711680 (0x00FF0000).

te-lsa *metric-value*

Specifies that the TE metric field in the TE metric sub tlv for all type 10 Opaque LSAs LINK TLV originated by the router will be modified to the specified metric-value or a default value. The range for metric-value are 1 through 4294967295 (Hex: 0x00001 to 0xFFFFFFFF). The default value is 4294967295 (Hex: 0xFFFFFFFF). This parameter only applies to the default instance of OSPF.

Modes

OSPFv2 router configuration mode

OSPFv2 router VRF configuration mode

Usage Guidelines

Use this command to enable OSPFv2 to advertise its locally generated router LSAs with a maximum metric to direct transit traffic away from the device, while still routing for directly connected networks. By advertising the maximum metric, the device does not attract transit traffic.

Any new OSPFv2 instance configured after the max-metric configuration is completed requires that the **max-metric** command be configured again to take in the new OSPFv2 instance.

The **no** form of the command disables the advertising of the maximum metric value in different LSAs.

Examples

The following example turns off the advertisement of special metric values in all router, summary, and external LSAs.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# no max-metric router-lsa
```

The following example configures an OSPFv2 device to advertise a maximum metric for 72 seconds after a restart before advertising with a normal metric.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# max-metric router-lsa on-startup 72
```

The following example indicates that OSPF is being shutdown and that all links in the router LSA should be advertised with the value 0xFFFF and the metric value for all external and summary LSAs is set to 0xFF0000 until OSPF is restarted. This configuration will not be saved.

```
device# configure terminal
device(config)# ip router ospf
device(config-ospf-router)# max-metric router-lsa external-lsa summary-lsa link all
```

max-sw-age

Configures the maximum software aging.

Syntax

max-sw-age *age*

no max-sw *age*

Command Default

The default is 120 seconds.

Parameters

age

You can specify from 1 - 65535 seconds.

Modes

Authentication mode

Usage Guidelines

Aging for a permitted or non-blocked MAC address occurs in two phases, known as MAC aging interval configured using the **mac-age-time** command and software aging. After normal MAC aging period for permitted clients (or clients in restricted VLAN), the software aging period begins. After the software aging period ends, the client session ages out and can be authenticated again if the device receives traffic from the MAC address.

Software aging is not applicable for blocked MAC addresses.

The **no** form of this command disables maximum software age.

Examples

The following example configures the maximum software age to 170 seconds.

```
device(config)# authentication
device(config-authen)# max-sw-age 170
```

History

Release version	Command history
08.0.20	This command was introduced.

maxas-limit

Imposes a limit on the number of autonomous systems in the AS-PATH attribute.

Syntax

maxas-limit in *num*

no maxas-limit in

Parameters

in

Allows an AS-PATH attribute from any neighbor to impose a limit on the number of autonomous systems.

num

Specifies a value for the limit. Valid values range from 0 through 300. The default is 300.

Modes

BGP configuration mode

Examples

The following example sets the limit on the number of BGP4 autonomous systems in the AS-PATH attribute to 100.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# maxas-limit in 100
```

maximum (Port MAC Security)

Configures the maximum number of secure MAC addresses an interface can store when port MAC security is enabled.

Syntax

maximum *max-num*

no maximum *max-num*

Command Default

By default, when port MAC security is enabled, an interface can store one secure MAC address.

Parameters

max-num

The maximum number of secure MAC addresses that can be configured. The range is from 0 through 64, plus the total number of global resources available. The default is 1.

Modes

Port security configuration mode

Port security interface configuration mode

Usage Guidelines

Besides the maximum of 64 local resources available for an interface, 8192 additional global resources are shared among all interfaces on the device by default. The default system value of the global resources can be changed using the **system-max pms-global-pool** command. When an interface has secured enough MAC addresses to reach its configured limit for local resources, it uses the global resources to secure additional MAC addresses. Global resources are shared among all the interfaces on a first-come, first-served basis.

The **no** form of the command sets the maximum number of secure MAC addresses an interface can store to one.

Examples

The following example configures the maximum number of secure MAC addresses an interface can store as 50.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port security
device(config-port-security-e1000-1/1/1)# maximum 50
```

maximum-paths (BGP)

Sets the maximum number of BGP4 and BGP4+ shared paths.

Syntax

maximum-paths *num* | **use-load-sharing**

no maximum-paths

Parameters

num

Specifies the maximum number of paths across which the device balances traffic to a given BGP destination. Valid values range is from 1 through 32. The default is 1.

use-load-sharing

Uses the maximum IP ECMP path value that is configured by means of the **ip load-sharing** command.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Use this command to change the maximum number of BGP4 shared paths, either by setting a value or using the value configured by the **ip load-sharing** command.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

The **no** form of the command restores the default.

Examples

The following example sets the maximum number of BGP4 shared paths to 8.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# maximum-paths 8
```

The following example sets the maximum number of BGP4+ shared paths to that of the value already configured using the **ip load-sharing** command.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# maximum-paths use-load-sharing
```

The following example sets the maximum number of BGP4 shared paths to 2 in a nondefault VRF instance in the IPv4 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# maximum-paths 2
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

maximum-paths ebgp ibgp

Specifies the number of equal-cost multipath eBGP or iBGP routes or paths that are selected.

Syntax

maximum-paths { **ebgp** *num* | **ibgp** *num* }

no maximum-paths

Parameters

ebgp
Specifies eBGP routes or paths.

ibgp
Specifies iBGP routes or paths.

num
The number of equal-cost multipath routes or paths that are selected. Range is from 1 through 8. 1 disables equal-cost multipath.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Enhancements to BGP load sharing support the load sharing of BGP4 and BGP4+ routes in IP Equal-Cost Multipath (ECMP), even if the BGP multipath load-sharing feature is not enabled by means of the **use-load-sharing** option to the **maximum-paths** command. You can set separate values for IGMP and ECMP load sharing. Use this command to specify the number of equal-cost multipath eBGP or iBGP routes or paths that are selected.

Examples

The following example sets the number of equal-cost multipath eBGP routes or paths that will be selected to 6 in the IPv4 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)#  maximum-paths ebgp 6
```

The following example sets the number of equal-cost multipath iBGP routes or paths that will be selected to 4 in the IPv6 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# maximum-paths ibgp 4
```

The following example sets the number of equal-cost multipath eBGP routes or paths that will be selected to 3 in a nondefault VRF instance in the IPv4 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# maximum-paths ebgp 3
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

maximum-preference

Configures the Router Advertisement (RA) guard policy to accept RAs based on a router preference setting.

Syntax

maximum-preference { **high** | **low** | **medium** }

no maximum-preference { **high** | **low** | **medium** }

Command Default

The router preference setting for the RA guard policy is high (allows all RAs).

Parameters

high

Configures the router preference of RAs for the RA guard policy to high (allows all RAs). This is the default.

low

Allows RAs of low router preference.

medium

Allows RAs of low and medium router preference.

Modes

RA guard policy configuration mode

Usage Guidelines

If a very low value is set, the RAs expected to be forwarded might get dropped.

The **no** form of this command removes the router preference for an RA guard policy.

Examples

The following example configures the RA guard policy router preference to low:

```
device(config)# ipv6 raguard policy p1
device(config-ipv6-RAG-policy p1)# maximum-preference low
```

mdi-mdix

Enables or disables Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDIX) detection on all Gigabit Ethernet Copper ports.

Syntax

mdi-mdix { **mdi** | **mdix** | **auto** }

no mdi-mdix [**mdi** | **mdix** | **auto**]

Command Default

The auto MDI/MDIX detection feature is enabled on all Gigabit Ethernet copper ports.

Parameters

mdi

Turns off automatic MDI/MDIX detection and defines a port as an MDI-only port.

mdix

Turns off automatic MDI/MDIX detection and defines a port as an MDIX-only port.

auto

Enables automatic MDI/MDIX detection on a port.

Modes

Interface configuration mode

Usage Guidelines

The auto MDI/MDIX detection feature can automatically correct errors in cable selection, making the distinction between a straight-through cable and a crossover cable insignificant. The command applies to copper ports only.

NOTE
The **mdi-mdix mdi** and **mdi-mdix mdix** commands work independently of auto-negotiation. Thus, these commands work whether auto-negotiation is turned on or off.

The **no** form of the command disables the specified mode.

Examples

The following example turns off automatic MDI/MDIX detection and defines a port as an MDI-only port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# mdi-mdix mdi
```

The following example turns on automatic MDI/MDIX detection on a port that was previously set as an MDI or MDIX port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# mdi-mdix auto
```

med-missing-as-worst

Configures the device to favor a route that has a Multi-Exit Discriminator (MED) over a route that does not have one.

Syntax

med-missing-as-worst

no med-missing-as-worst

Modes

BGP configuration mode

Usage Guidelines

When MEDs are compared, by default the device favors a low MED over a higher one. Because the device assigns a value of 0 to a route path MED if the MED value is missing, the default MED comparison results in the device favoring the route paths that do not have MEDs.

The **no** form of the command restores the default where a device does not favor a route that has a MED over other routes.

Examples

The following example configures the device to favor a route containing a MED.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# med-missing-as-worst
```

member-group

Adds the member VLAN group to the topology group.

Syntax

member-group *number*

no member-group *number*

Command Default

A member VLAN group is not added to the topology group.

Parameters

number

Specifies the member VLAN group ID.

Modes

Topology group configuration mode

Usage Guidelines

The **no** form of the command removes the member VLAN group.

The VLAN group must already be configured.

Once you add a VLAN group as a member of a topology group, all the Layer 2 protocol configuration information for the VLAN group is deleted. For example, if STP is configured on a VLAN and you add the VLAN to a topology group, the STP configuration is removed from the VLAN. Once you add the VLAN to a topology group, the VLAN uses the Layer 2 protocol settings of the master VLAN. If you remove a member VLAN group from a topology group, you must reconfigure the Layer 2 protocol information in the VLAN group.

Examples

The following example shows how to add a member VLAN group:

```
device(config)# topology-group 2
device(config-topo-group-2)# member-group 2
```

member-group (STP)

Adds the member VLAN group to the STP group.

Syntax

member-group *number*

no member-group *number*

Command Default

A member VLAN group is not added to the STP group.

Parameters

number

Specifies the member VLAN group ID.

Modes

STP group configuration mode

Usage Guidelines

The VLAN group must already be configured. All the VLANs in the member group inherit the STP settings of the master VLAN in the group.

The **no** form of the command removes the member VLAN group.

Examples

The following example shows how to add a member VLAN group.

```
device(config)# stp-group 2
device(config-stp-group-2)# member-group 2
```

member-vlan

Adds members to the VLAN topology group.

Syntax

member-vlan *vlan-id* [**to** *vlan-id* | [*vlan-id* **to** *vlan-id* | *vlan-id*]...]

no member-vlan *vlan-id* [**to** *vlan-id* | [*vlan-id* **to** *vlan-id* | *vlan-id*]...]

Command Default

Member VLANs are not added to the VLAN topology group.

Parameters

vlan-id

Adds a member VLAN ID to the topology group.

to *vlan-id*

Adds the range of member VLANs to the topology group.

Modes

Topology group configuration mode

Usage Guidelines

The member VLAN group must configured before adding it to the topology group.

Each topology group can control up to 4096 VLANs. The VLANs within a VLAN group have the same ports and use the same values for other VLAN parameters.

Once you add a VLAN as a member of a topology group, all the Layer 2 protocol configuration information for the VLAN is deleted. For example, if STP is configured on a VLAN and you add the VLAN to a topology group, the STP configuration is removed from the VLAN. Once you add the VLAN to a topology group, the VLAN uses the Layer 2 protocol settings of the master VLAN. If you remove a member VLAN from a topology group, you must reconfigure the Layer 2 protocol information in the VLAN or VLAN group.

The **no** form of the command removes the member VLANs from the topology group.

Examples

The following example adds the members to the VLAN topology group.

```
device(config)# topology-group 2
device(config-topo-group-2)# member-vlan 4
device(config-topo-group-2)# member-vlan 5
```

member-vlan (STP)

Adds member VLANs to the STP group.

Syntax

member-vlan *vlan-id* [**to** *vlan-id* | [*vlan-id* **to** *vlan-id* | *vlan-id*]...]

no member-vlan *vlan-id* [**to** *vlan-id* | [*vlan-id* **to** *vlan-id* | *vlan-id*]...]

Command Default

Member VLANs are not added to the STP group.

Parameters

vlan-id

Adds a member VLAN ID to the STP group.

to *vlan-id*

Adds the range of member VLANs to the STP group.

Modes

STP group configuration mode

Usage Guidelines

The member VLAN group must be configured before adding it to the STP group.

All the VLANs in the member group inherit the STP settings of the master VLAN in the group.

The **no** form of the command removes the member VLANs from the STP group.

Examples

The following example adds the member VLANs to the STP group.

```
device(config)# stp-group 2
device(config-stp-group-2)# member-vlan 4
device(config-stp-group-2)# member-vlan 5
```

mesh-group

Configures a multicast source discovery protocol (MSDP) mesh group from several rendezvous points (RPs).

Syntax

mesh-group *group-name peer-address*

no mesh-group *group-name peer-address*

Command Default

Mesh groups are not configured.

Parameters

group-name

Specifies the mesh group as alphabetic characters. The limit is 31 characters.

peer-address

Specifies the IP address of the MSDP peer that is being placed in the mesh group. Each mesh group can include up to 32 peers.

Modes

MSDP VRF configuration mode

Usage Guidelines

The **no** form of this command removes mesh groups.

You must configure the **msdp-peer** command to configure the MSDP peers by assigning their IP addresses and the loopback interfaces before you configure a mesh group.

You can have up to four mesh groups in a multicast network. Each mesh group can include up to 15 peers.

Each device that will be part of a mesh group must have a mesh group definition for all the peers in the mesh-group.

Examples

This example configures an MSDP mesh group on each device that will be included in the mesh group.

```
Device(config)# router msdp
Device(config-msdp-router)# msdp-peer 206.251.18.31 connect-source loopback 2
Device(config-msdp-router)# msdp-peer 206.251.19.31 connect-source loopback 2
Device(config-msdp-router)# msdp-peer 206.251.20.31 connect-source loopback 2
Device(config-msdp-router)# mesh-group GroupA 206.251.18.31
Device(config-msdp-router)# mesh-group GroupA 206.251.19.31
Device(config-msdp-router)# mesh-group GroupA 206.251.20.31
Device(config-msdp-router)# exit
```

message-interval

Changes the default PIM Sparse join or prune message interval.

Syntax

message-interval [**vrf** *vrf-name*] *interval*

no message-interval [**vrf** *vrf-name*] *interval*

Parameters

vrf *vrf-name*

Specifies a VRF instance.

interval

Specifies the join or prune message interval in seconds. The range is 10 through 18724; the default is 60.

Command Default

The join or prune interval is 60 seconds.

Modes

PIM router configuration mode

PIM router VRF configuration mode

Usage Guidelines

The **no** form of this command restores the default; the join-prune interval is 60 seconds.

PIM Sparse join and prune messages inform other PIM Sparse routers about clients who want to become receivers (join) or stop being receivers (prune) for PIM Sparse groups.

NOTE
Configure the same join or prune message interval on all the PIM Sparse routers in the PIM Sparse domain. The performance of PIM Sparse can be adversely affected if the routers use different timer intervals.

Examples

This example changes the PIM join or prune interval to 30 seconds.

```
Device(config)# ipv6 router pim
Device(config-ipv6-pim-router)# message-interval 30
```

This example changes the PIM join or prune interval on a VRF to 30 seconds.

```
Device(config)# ipv6 router pim vrf blue
Device(config-ipv6-pim-router-vrf-blue)# message-interval 30
```

metric-type

Configures the default metric type for external routes.

Syntax

metric-type { **type1** | **type2** }

no metric-type { **type1** | **type2** }

Command Default

Type 2

Parameters

type1

The metric of a neighbor is the cost between itself and the device plus the cost of using this device for routing to the rest of the world.

type2

The metric of a neighbor is the total cost from the redistributing device to the rest of the world.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

The **no** form of the command restores the default setting. You must specify a type parameter when using the **no** form.

Examples

The following example sets the default metric type for external routes to type 1.

```
device# configure terminal
device(config)# router ospf
device(config-ospf6-router)# metric-type type1
```

The following example sets the default metric type for external routes to type 2.

metro-ring

Adds a metro ring to a port-based VLAN and enters MRP configuration mode.

Syntax

metro-ring *ring-id*

no metro-ring *ring-id*

Command Default

A metro ring is not added to a port-based VLAN.

Parameters

ring-id

Specifies the ID of the metro ring. The ring ID ranges from 1 through 1023. 256 is reserved for VSRP.

Modes

VLAN configuration mode

Usage Guidelines

If you plan to use a topology group to add VLANs to the ring, make sure you configure MRP on the topology group master VLAN.

If you want to add more than one metro ring to a port-based VLAN, use the **metro-rings** command.

The **no** form of the command removes the metro ring from the port-based VLAN.

Examples

The following example shows how to add the metro ring to a port-based VLAN.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-1)#
```

micro-bfd-enable

Enables micro-Bidirectional Forwarding Detection (micro-BFD) at a global level.

Syntax

micro-bfd-enable

no micro-bfd-enable

Command Default

Micro-BFD is disabled.

Modes

Global configuration mode

Usage Guidelines

For micro-BFD to be configured at a global level, the device must be restarted after using the **micro-bfd-enable** command. Enabling micro-bfd causes multihop BFD support to be disabled.

This command is supported for ICX 7850 devices only.

The **no** form of the command disables micro-BFD sessions globally.

Examples

The following example enables micro-BFD globally.

```
device# configure terminal
device(config)# micro-bfd-enable
```

History

Release version	Command history
08.0.90	This command was introduced.

mirror-filter source vlan

Configures one or more VLANs to be filtered from Switched Port Analyzer (SPAN) or Remote Switched Port Analyzer (RSPAN) mirrored traffic.

Syntax

mirror-filter source vlan {**vlan-id** }

no mirror-filter source vlan {**vlan-id** }

Command Default

By default, VLAN-based filtering is disabled.

Parameters

vlan-id

Specifies the VLAN for which traffic is to be filtered. More than one VLAN ID, a VLAN range, or both can be entered on the same command line.

Modes

The **no** form of the command removes the mirror-filter for forwarding specified VLANs.

Usage Guidelines

A maximum of 72 VLANs can be mirror-filtered, contingent on TCAM availability.

When you configure VLAN mirror filtering, keep in mind the potential for bandwidth congestion on destination uplinks. If the RSPAN destination uplink is the same as the forwarding path, the number of mirror traffic sources configured should be appropriate to the bandwidth available for forwarding traffic.

Examples

The following example configures a single VLAN for forwarding.

```
device# configure terminal
device(config)# mirror-filter source vlan 100
```

The following example configures two single VLANs for forwarding.

```
device# configure terminal
device(config)# mirror-filter source vlan 3000 3500
```

The following example configures RSPAN-based port mirroring on ports 1/1/1 and 1/1/2 and configures LAG 1 as the destination.

```
device# configure terminal
device(config)# vlan 3000 by port
device(config-vlan-3000)# untagged ethernet 1/1/1
device(config-vlan-3000)# tagged ethernet 1/1/2
. . .
device(config-vlan-3000)# exit
device(config)# vlan 3500 by port
device(config-vlan-3500)# tagged ethernet 1/1/1 to 1/1/2
. . .
device(config-vlan-3500)# exit
device(config)# rspan-vlan 4000
device(config-rspan-vlan-4000)# tagged lag 1
device(config-rspan-vlan-4000)# rspan destination lag 1
device(config-rspan-vlan-4000)# rspan source monitor-in ethernet 1/1/1 to 1/1/2
device(config-rspan-vlan-4000)# end
device# show vlan brief ethernet 1/1/1
Port 1/1/1 is a member of 2 VLANs
VLANs 3000 3500
Untagged VLAN :
Tagged VLANs : 3000 3500
```

In the example, the mirrored traffic from ports 1/1/1 and 1/1/2 is sent through LAG 1. Port 1/1/1 is an untagged member of VLAN 3000 and a tagged member of VLAN 3500. Traffic for both these VLANs inbound to 1/1/1 is mirrored and sent through the destination port, LAG 1. Because VLAN-based filtering is enabled for VLAN 3000, mirrored traffic from that VLAN is filtered, and the RSPAN destination, LAG 1, carries on VLAN 3500 traffic arriving on port 1/1/1.

History

Release version	Command history
08.0.90f	This command was introduced.

mirror-port

Configures port mirroring on individual ports.

Syntax

mirror-port ethernet *stackid/slot/port* [**input** | **output**]

no mirror-port ethernet *stackid/slot/port* [**input** | **output**]

Command Default

Ports are not mirrored.

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet port to which mirrored traffic is copied.

input

Copies the ingress traffic.

output

Copies the egress traffic.

Modes

Global configuration mode

Usage Guidelines

Use this command to configure ports to which the monitored traffic is copied. If you do not specify the traffic type, both types of traffic apply. The input and output mirroring ports can be on different ports.

All FastIron devices can have one mirroring port that monitors multiple ports, but cannot have multiple mirror ports for one monitored port. If the mirror port and the monitored ports are on different stack units, only one active mirror port is allowed for the entire traditional stack. If the mirror port and the monitored ports are on the same port region, multiple active mirror ports are allowed for the entire traditional stack. Devices in a traditional stack support 24 ports per port region.

NOTE
Port-based mirroring and VLAN-based mirroring cannot be enabled on a port at the same time.

The **no** form of the command removes the mirrored ports.

Examples

The following example shows the port mirroring configuration.

```
device(config)# mirror-port ethernet 1/2/4
```

mka-cfg-group

Creates and names a MACsec Key Agreement (MKA) configuration group.

Syntax

mka-cfg-group *group-name*

no mka-cfg-group*group-name*

Command Default

No MACsec options are configured for an MKA configuration group. All related parameters retain their default settings.

Parameters

group-name

Provides a name for an MKA configuration group that can be applied to ports.

Modes

dot1x-mka configuration mode

dot1x-mka-interface configuration mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The **no** form of this command deletes the MKA configuration group. MACSec is disabled on the ports where the group is configured.

The **dot1x-mka-enable** command must be executed before the **mka-cfg-group** command can be used.

After the MACsec Key Agreement (MKA) configuration group is created, you can apply the configured group and its settings to an interface being configured using the **mka-cfg-group** command in the dot1x-mka-interface configuration mode.

Examples

The following example creates the MKA configuration group test1.

```
device(config)# dot1x-mka
  dot1x-mka-enable              Enable MACsec
device(config)# dot1x-mka-enable
device(config-dot1x-mka)#
device(config-dot1x-mka)# mka-cfg-group
  ASCII string   Name for this group
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)#

device(config-dot1x-mka-group-test1)# key-server-priority
  DECIMAL   Priority of the Key Server. Valid values should be between 0 and 255
device(config-dot1x-mka-group-test1)# key-server-priority 5
device(config-dot1x-mka-group-test1)#

device(config-dot1x-mka-group-test1)# macsec cipher-suite
  gcm-aes-128   GCM-AES-128 Cipher suite
device(config-dot1x-mka-group-test1)# macsec cipher-suite gcm-aes-128
device(config-dot1x-mka-group-test1)#

device(config-dot1x-mka-group-test1)# macsec confidentiality-offset
  30   Confidentiality offset of 30
  50   Confidentiality offset of 50
device(config-dot1x-mka-group-test1)# macsec confidentiality-offset 30
device(config-dot1x-mka-group-test1)#

device(config-dot1x-mka-group-test1)# macsec frame-validation
  check     Validate frames with secTAG and accept frames without secTAG
  disable   Disable frame validation
  strict    Validate frames with secTAG and discard frames without secTAG
device(config-dot1x-mka-group-test1)# macsec frame-validation strict
device(config-dot1x-mka-group-test1)#

device(config-dot1x-mka-group-test1)# macsec replay-protection
  out-of-order   Validate MACsec frames arrive in the given window size
  strict         Validate MACsec frames arrive in a sequence
device(config-dot1x-mka-group-test1)# macsec replay-protection strict
device(config-dot1x-mka-group-test1)#
```

The following example applies the previously configured MKA group test1 to ethernet interface 1/3/3.

```
device(config)# dot1x-mka-enable
device(config-dot1x-mka)# enable-mka ethernet 1/3/3
device(config-dot1x-mka-1/3/3)# mka-cfg-group test1
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.20a	This command was expanded to support the association of a configured MKA group and its settings to an interface at the interface configuration level. The **mka-group** command was deprecated as part of this change.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

mka-keychain

Applies a pre-defined MKA keychain to MACsec transmissions on a specific interface.

Syntax

mka-keychain { *name* }

no mka-keychain { *name* }

Command Default

By default, no MKA keychain is defined or applied.

Parameters

name

The name of the MKA keychain

Modes

dot1x-mka-interface configuration mode

Usage Guidelines

The **no** form of the command removes the MKA keychain from the interface and adminstratively brings the interface down.

An MKA keychain is allowed as part of interface configuration when a pre-shared key is not configured on the interface.

Use the **keychain** *name* **mka** command to define the keychain.

Use the **show keychain mka** command to display all configured keychains for MACsec.

MACsec must be configured and enabled globally before the interface configuration is enabled. Refer to the *RUCKUS FastIron Security Configuration Guide*.

Examples

The following example applies MKA-cfg-group 4 and MKA keychain "fi-msec" (both previously defined) to port 2/1/23.

```
device# configure terminal
device(config)# enable-mka ethernet 2/1/23
device(config-dot1x-mka-2/1/23)# mka-cfg-group 4
device(config-dot1x-mka-2/1/23)# mka-keychain fi-msec
device(config-dot1x-mka-2/1/23)# end
device#
```

History

Release version	Command history
09.0.10b	This command was introduced.

monitor (LAG)

Monitors an individual port in a deployed LAG.

Syntax

monitor { **ethe-port-monitored** *stackid/slot/port* | **named-port-monitored** *name* } [**ethernet** *stackid/slot/port*] { **input** | **output** | **both** }

no monitor{ **ethe-port-monitored** *stackid/slot/port* | **named-port-monitored** *name* } [**ethernet** *stackid/slot/port*] { **input** | **output** | **both** }

Command Default

Traffic is not monitored on ports.

Parameters

ethe-port-monitored *stackid/slot/port*

Specifies the Ethernet port to be monitored.

named-port-monitored *name*

Specifies the named port that you want to monitor.

ethernet *stackid/slot/port*

Specifies the mirror ports to be used and specifies the port to which the traffic analyzer is attached.

input

Monitors the incoming packets.

output

Monitors the outgoing packets.

both

Monitors both incoming and outgoing packets.

Modes

LAG configuration mode

Usage Guidelines

By default, when you monitor the LAG virtual interface, aggregated traffic for all the ports in the LAG is copied to the mirror port.

You can configure the device to monitor individual ports in a LAG including Ethernet ports or named ports. If a new port is added to a deployed LAG and if the entire LAG is monitored, the new port will also be mirrored by the same port monitoring traffic across the entire LAG.

NOTE

You can use only one mirror port for each monitored LAG port. You cannot configure mirroring on an undeployed LAG.

The **no** form of the command stops monitoring the traffic.

Examples

The following is an example of monitoring traffic on an individual Ethernet port within a LAG.

```
device(config)# lag test2 dynamic id 1
device(config-lag-test2)# ports ethernet 1/1/1 ethernet 1/1/9
device(config-lag-test2)# monitor ethe-port-monitored 1/1/1 ethernet 1/1/9 input
```

The following example shows the monitoring of traffic on a named port.

```
device(config)# lag test2 dynamic id 2
device(config-lag-test2)# ports ethernet 1/1/1 ethernet 1/1/9
device(config-lag-test2)# monitor named-port-monitored port1 both
```

monitor (ERSPAN)

Configures ERSPAN monitoring.

Syntax

monitor profile *profile-number* { **both** | **input** | **output** }

no monitor profile *profile-number* { **both** | **input** | **output** }

Command Default

Ports are not monitored.

Parameters

profile *profile-number*

Specifies the ERSPAN profile to be used. The monitor port is specified in the profile.

both

Monitors both incoming and outgoing traffic on the monitor port.

input

Monitors the ingress traffic on the monitor port.

output

Monitors the egress traffic on the monitor port.

Modes

Interface configuration mode

Usage Guidelines

You must configure an ERSPAN profile before you can enable ERSPAN monitoring.

ERSPAN does not support VLAN monitoring.

The **no** form of the command disables ERSPAN monitoring on the port.

Examples

The following example shows how to enable ERSPAN monitoring for ingress and egress traffic. The monitor port is 1/1/1, and the ERSPAN profile is 1.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# monitor profile 1 both
```

History

Release version	Command history
08.0.40	This command was introduced.

monitor

Configures monitoring of the mirrored ports.

Syntax

monitor [**ethernet** *stackid/slot/port*] { **both** | **input** | **output** }

no monitor [**ethernet** *stackid/slot/port*] { **both** | **input** | **output** }

Command Default

Ports are not monitored.

Parameters

ethernet *stackid/slot/port*
: Specifies the mirror port to be used.

both
: Monitors both incoming and outgoing traffic on the mirrored port.

input
: Monitors the ingress traffic on the mirrored port.

output
: Monitors the egress traffic on the mirrored port.

Modes

Interface configuration mode

VLAN configuration mode

Usage Guidelines

If you configure both ACL mirroring and ACL-based rate limiting on the same port, then all packets that match are mirrored, including the packets that exceed the rate limit. The same port cannot be both a monitored port and the mirror port. The same port can be monitored by one mirror port for ingress traffic and another mirror port for egress traffic. The mirror port cannot be a LAG port. More than one monitored port can be assigned to the same mirror port.

For stacked devices, if the ingress and egress analyzer ports are always network ports on the local device, each device may configure the ingress and egress analyzer port independently. However, if you need to mirror to a remote port, then only one ingress and one egress analyzer port are supported for the entire system.

The **no** form of the command stops monitoring the mirrored ports.

Examples

The following example shows how to monitor the mirrored ports.

```
device(config)# interface ethernet 1/2/11
device(config-if-e1000-1/2/11)# monitor ethernet 1/2/4 both
```

The following example shows how to configure VLAN-based mirroring.

```
device(config)# mirror-port ethernet 1/1/21 input
device(config)# vlan 10
device(config-vlan-10)# monitor ethernet 1/1/21
device(config-vlan-10)# exit
device(config)# vlan 20
device(config-vlan-20)# monitor ethernet 1/1/21
device(config-vlan-20)# end
```

monitor-profile

Configures a monitor port profile.

Syntax

monitor-profile *profile-number* **type erspan**

no monitor-profile *profile-number*

Command Default

ERSPAN is not configured.

Parameters

profile-number

Specifies the profile number to configure. If the profile is new, assigns this number to the profile. Valid values are from 1 through 4.

type erspan

Specifies the type of profile. The only supported profile is **erspan**.

Modes

Global configuration mode

Usage Guidelines

The source IP can be any port on the router. The destination IP is the port on the destination host.

The **no** form of the command deletes the ERSPAN profile.

Examples

The following example configures an ERSPAN profile. This profile sends mirrored traffic from a port on switch 2.2.2.2 to the host 1.1.1.1.

```
device(config)# monitor-profile 1 type erspan
device(config-monitor-profile 1)# source-ip 2.2.2.2
device(config-monitor-profile 1)# destination-ip 1.1.1.1
device(config-monitor-profile 1)# exit
```

The following example modifies the destination host in an ERSPAN profile.

```
device(config)# monitor-profile 1 type erspan
device(config-monitor-profile 1)# no destination-ip 1.1.1.1
device(config-monitor-profile 1)# destination-ip 3.3.3.3
device(config-monitor-profile 1)# exit
```

The following example deletes an ERSPAN profile.

```
device(config)# no monitor-profile 1
```

History

Release version	Command history
08.0.40	This command was introduced.

mount disk0

Mounts the filesystem of the external USB.

Syntax

mount disk0

Modes

Privileged EXEC mode

Examples

This example mounts the filesystem of the external USB.

```
device# mount disk0
```

History

Release version	Command history
08.0.30	This command was introduced.

msdp-peer

Configures a multicast source discovery protocol (MSDP) peer.

Syntax

msdp-peer *ip-address* [**ao** *keychain-name*]

no msdp-peer *ip-address* [**ao** *keychain-name*]

msdp-peer *ip-address* [**connect-source loopback** *num* [**ao** *keychain-name*] | **shutdown**]

no msdp-peer *ip-address* [**connect-source loopback** *num* [**ao** *keychain-name*] | **shutdown**]

Parameters

ip-address
: Specifies the IPv4 address of the MSDP peer.

connect-source loopback *num*
: Specifies the loopback interface you want to use as the source for sessions with the neighbor; it must be reachable within the VRF.

ao *keychain-name*
: Specifies the pre-configured TCP authentication keychain to use as the source for sessions with the neighbor.

shutdown
: Disables the MSDP peer. Configure this keyword at the MSDP router configuration mode level.

Modes

MSDP router configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of the command deletes the MSDP peer configuration. You should provide the IP address to identify the MSDP peer configuration to be deleted.

It is not advisable to change the MSDP peer configuration for active connections.

It is not advisable to change the underlying configuration of the TCP AO keychain specified in the MSDP peer configuration or to remove or replace the keychain. Any of these changes may cause the existing MSDP or BGP sessions to flap.

Use the **shutdown** option at the MSDP router level to disable the MSDP peer.

NOTE
The PIM Sparse rendezvous point (RP) is also an MSDP peer.

NOTE
Devices that run MSDP usually also run BGP. The source address used by the MSDP device is normally configured to be the same source address used by BGP.

It is strongly recommended that you specify the **connect-source loopback** keyword when you configure the **msdp-peer** command. If you do not, the device uses the IP address of the outgoing interface. You should also make sure that the IP address of the connect-source loopback is the source IP address used by the PIM RP and the BGP device.

Examples

The following example configures a device with the address 205.216.162.1 as an MSDP peer.

```
device(config)# router msdp
device(config-msdp-router)# msdp-peer 205.216.162.1
```

The following example configures an MSDP peer on a VRF.

```
device(config)# router msdp vrf blue
device(config-msdp-router-vrf-blue)# msdp-peer 205.216.162.1 connect-source loopback 1
```

The following example adds an MSDP peer and specifies a loopback interface as the source interface for sessions with the peer. By default, the device uses the subnet address configured on the physical interface where you configure the peer as the source address for sessions with the peer.

```
device(config)# interface loopback 1
device(config-lbif-1)# ip address 9.9.9.9/32
device(config-lbif-1)# exit
device(config)# router msdp
device(config-msdp-router)# msdp-peer 2.2.2.99 connect-source loopback 1
```

The following example adds an MSDP peer and specifies that the interface loopback 1 and the TCP AO keychain chain1 are to be used for sessions with the peer.

```
device(config)# router msdp
device(config-msdp-router)# msdp-peer 2.2.2.1 connect-source loopback 1 ao chain1
```

History

Release	Command History
09.0.10	This command was modified to add TCP keychain authentication options.

mstp admin-edge-port

Configures ports as operational edge ports.

Syntax

mstp admin-edge-port { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no mstp admin-edge-port { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

Ports are not configured as edge ports.

Parameters

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Configures a specified Ethernet port as an edge port, or configures a range of ports as edge ports.

lag *lag-id* [**to** *lag-id*]

Configures the specified LAG or range of LAGs as edge ports.

Modes

Global configuration mode

Usage Guidelines

You can define specific ports as edge ports for the region in which they are configured to connect to devices (such as a host) that are not running STP, RSTP, or MSTP. If a port is connected to an end device such as a PC, the port can be configured as an edge port.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of the command removes a port from being an edge port.

Examples

The following example shows how to configure an Ethernet port as an edge port.

```
device(config)# mstp admin-edge-port ethernet 1/3/1
```

History

Release version	Command history
08.0.61	This command was modified to include the LAG ID option.

mstp admin-pt2pt-mac

Creates a point-to-point link between ports to increase the speed of convergence.

Syntax

mstp admin-pt2pt-mac { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no mstp admin-pt2pt-mac { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

By default, a point-to-point link is not available between ports.

Parameters

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Configures the specified Ethernet port or port range as one end of a point-to-point link.

lag *lag-id* [**to** *lag-id*]

Specifies a LAG or a range of LAGs to serve as one end of a point-to-point link.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the point-to-point link on the ports.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

Examples

The following example configures two Ethernet ports as endpoints for point-to-point links.

```
device(config)# mstp admin-pt2pt-mac ethernet 1/2/5 ethernet 1/4/5
```

History

Release version	Command history
08.0.61	This command was modified to add LAG ID options.

mstp disable

Disables MSTP on interfaces.

Syntax

mstp disable { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no mstp disable { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

MSTP is not enabled by default.

Parameters

ethernet [**to** *unit/slot/port*]

Disables MSTP on the specified Ethernet interface or range of interfaces.

lag *lag-id* [**to** *lag-id*]

Disables MSTP on a LAG virtual interface or on a range of LAG virtual interfaces.

Modes

Global configuration mode

Usage Guidelines

When a port is disabled for MSTP, the port blocks all the VLAN traffic that is controlled by Multiple Spanning Tree Protocol (MSTP) instance and the Common and Internal Spanning Tree (CIST) instances.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of the command enables MSTP.

Examples

The following example shows how to disable MSTP.

```
device(config)# mstp disable ethernet 1/2/1
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

mstp edge-port-auto-detect

Automatically sets a port as an operational edge port.

Syntax

mstp edge-port-auto-detect

no mstp edge-port-auto-detect

Command Default

Ports are not automatically set as edge ports.

Modes

Global configuration mode

Usage Guidelines

You can configure a Layer 3 switch to automatically set a port as an operational edge port if the port does not receive any BPDUs from the time of link-up. If the port receives a BPDU later, the port is automatically reset to become an operational non-edge port.

NOTE
After configuring, it takes the port about three seconds longer to come to the enable state.

The **no** form of the command resets the port as a non-operational edge port.

Examples

The following example shows how to automatically set ports as edge ports.

```
device(config)# mstp edge-port-auto-detect
```

mstp force-migration-check

Triggers a port to force transmit an MSTP BPDU.

Syntax

mstp force-migration-check { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no mstp force-migration-check { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

Ports are not configured to force transmit MSTP BPDUs.

Parameters

ethernet [**to** *unit/slot/port*]

Configures the specified Ethernet port or range of ports to force tranmist an MSTP BPDU.

lag *lag-id* [**to** *lag-id*]

Configures the specified LAG virtual interface or range of LAG virtual interfaces to force tranmist an MSTP BPDU.

Modes

Global configuration mode

Usage Guidelines

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of the command disables the force transmit of an MSTP BPDU.

Examples

The following example triggers the port to transmit an MSTP BPDU.

```
device(config)# mstp force-migration-check ethernet 1/3/1
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

mstp force-version

Configures the bridge to send BPDUs in a specific format.

Syntax

mstp force-version *mode*

no mstp force-version *mode*

Command Default

By default, the bridge sends the BPDUs in MSTP mode (3).

Parameters

mode

Forces the bridge to send BPDUs in a specific format: 0 for STP compatibility mode, 2 for RSTP compatibility mode, and 3 for MSTP mode.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the mode to MSTP mode.

Examples

The following example configures the bridge to forward BPDUs in STP compatibility mode.

```
device(config)# mstp force-version 0
```

mstp forward-delay

Configures the length of time a port waits before it forwards an RST BPDU after a topology change.

Syntax

mstp forward-delay *time*

no mstp forward-delay *time*

Command Default

The default is 15 seconds.

Parameters

time

Configures the time period a port waits before it forwards an RST BPDU after a topology change. The period ranges from 4 through 30 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the value to the default value of 15 seconds.

Examples

The following example configures the time period the port waits before it forwards an RST BPDU after a topology change to 10 seconds.

```
device(config)# mstp forward-delay 10
```

mstp hello-time

Configures the interval between two Hello packets.

Syntax

mstp hello-time *time*

no mstp hello-time *time*

Command Default

By default, the interval is 2 seconds.

Parameters

time

The time interval between two Hello packets. The value ranges from 1 through 10 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the interval to the default (2 seconds).

Examples

The following example configures the interval between two Hello packets to 5 seconds.

```
device(config)# mstp hello-time 5
```

mstp instance

Configures a Multiple Spanning Tree Protocol (MSTP) instance that allows multiple VLANs to be managed by a single STP instance.

Syntax

mstp instance*number*{**priority***priority-num*|**vlan***vlan-id*[**to***vlan-id*]|**vlan-group***group-id*|**lag***lag-id*|**ethernet***unit/slot/port* [**to***unit/slot/port*] {**path-cost***cost-value*[**priority***priority-value*] | **priority***priority-value*[**path-cost***cost-value*]}}

no mstp instance*number*{**priority***priority-num*|**vlan***vlan-id*[**to***vlan-id*]|**vlan-group***group-id*|**lag***lag-id*|**ethernet***unit/slot/port*[**to***unit/slot/port*]{**path-cost***cost-value*[**priority***priority-value*] | **priority***priority-value*[**path-cost***cost-value*]}}

Command Default

No MSTP instances are configured; any VLANs remain in the Common and Internal Spanning Tree (CIST) or stay free.

Parameters

number
: Specifies the number for the instance of MSTP that you are configuring. You can specify up to 15 instances, identifying each, in MSTP mode, by a number in the range from 1 through 4094. In MSTP mode, you cannot specify the value 0, which identifies the CIST. In MSTP+ mode, the range is from 0 through 4094.

priority*priority-num*
: Configures the priority for an MSTP instance. Valid values are from 0 through 61440 in increments of 4096. The default value is 128.

vlan*vlan-id*
: Assigns a VLAN to the MSTP instance.

to*vlan-id*
: Assigns a range of VLANs to the MSTP instance.

vlan-group*group-id*
: Assigns one or more VLAN groups to the MSTP instance.

lag*lag-id*
: Configures LAG port parameters for the MSTP instance.

ethernet*unit/slot/port*
: Configures Ethernet port parameters for the MSTP instance.

to*unit/slot/port*
: Configures a range of Ethernet port parameters for the MSTP instance.

path-cost*cost-value*
: Configures the MSTP port path cost. Valid values are from 1 through 200000000.

priority*priority-value*
: Specifies the forwarding preference for a port within a VLAN or on the device. You can specify a numeric value in the range from 0 through 240 in increments of 16. The default value is 32.

Modes

Global configuration mode

Usage Guidelines

Use of the **mstp instance** allows you to use fewer spanning-tree instances to map to VLANs.

The RUCKUS implementation of MSTP allows you to assign VLANs or ranges of VLANs to an MSTP instance before or after they have been defined. If predefined, a VLAN is placed in the Multiple Spanning Tree Protocol Instance (MSTI) that it was assigned to immediately upon the creation of the VLAN. Otherwise, the default operation is to assign all new VLANs to the CIST. VLANs assigned to the CIST by default can be moved later to a specified MSTI.

The system does not allow an MSTI without any VLANs mapped to it. Removing all VLANs from an MSTI deletes the MSTI from the system. By contrast, the CIST exists regardless of whether any VLANs are assigned to it. Consequently, if all VLANs are removed from the CIST, the CIST continues to exist and remains functional.

You can set a priority to the instance, giving it a forwarding preference over lower priority instances within a VLAN or on the switch. A higher number for the priority variable means a lower forwarding priority.

The system does not allow an MSTP instance without any VLANs mapped to it; removing all VLANs from an MSTP instance deletes the instance from the system.

In MSTP+ mode, you can specify an instance number value of 0 because MSTP+ mode allows you to add VLANs to and remove VLANs from the CIST.

The no form of the command in MSTP mode moves a VLAN or VLAN group from its assigned MSTP into the CIST.

The no form of the command in MSTP+ mode assigns any VLAN as a free VLAN.

Examples

The following example configures an MSTP instance and map VLANs 1 to 7 to it.

```
device(config)# mstp instance 7 vlan 4 to 7
```

The following example specifies a priority of 8192 to MSTP instance 1.

```
device(config)# mstp instance 1 priority 8192
```

The following example configures a path cost of 20000 to MSTP ports.

```
device(config)# mstp instance 1 ethernet 1/1/4 ethernet 1/1/5 ethernet 1/1/15 to 1/1/17 pathcost 20000
```

The following example configures a priority of 192 to the MSTP ports.

```
device(config)# mstp instance 1 ethernet 1/1/4 ethernet 1/1/5 ethernet 1/1/15 to 1/1/17 priority 192
```

The following example configures a path cost of 20000 and priority of 192 to the MSTP ports.

```
device(config)# mstp instance 1 ethernet 1/1/4 ethernet 1/1/5 ethernet 1/1/15 to 1/1/17 path-cost 20000
priority 192
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

Release version	Command history
08.0.90	This command was modified to configure the range for path cost and priority.

mstp max-age

Configures the amount of time the device waits to receive a Hello packet before it initiates a topology change.

Syntax

mstp max-age *time*

no mstp max-age *time*

Command Default

The default is 20 seconds.

Parameters

time

The time period a device waits to receive a Hello packet before it initiates a topology change. The period ranges from 6 through 40 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the maximum age to the default value.

Examples

The following example configures the maximum age to 20.

```
device(config)# mstp max-age 20
```

mstp max-hops

Configures the maximum hop count.

Syntax

mstp max-hops *count*

no mstp max-hops *count*

Command Default

The default is 20 hops.

Parameters

count

The maximum hop count. The number of hops ranges from 1 through 40.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the maximum hop count to the default value.

Examples

The following example configures the maximum hop count to 20.

```
device(config)# mstp max-hops 20
```

mstp name

Configures the MSTP name for the device.

Syntax

mstp name *name*

no mstp name *name*

Command Default

The default name for the device is blank (no name).

Parameters

name

The MSTP name for the device.

Modes

Global configuration mode

Usage Guidelines

Each switch that is running MSTP should be configured with a name. The name applies to the switch that can have many different VLANs that can belong to many different MSTP regions.

The **no** form of the command resets the MSTP name to blank (no name).

Examples

The following example configures the MSTP name as Device1.

```
device(config)# mstp name Device1
```

mstp revision

Configures an MSTP revision number for the device.

Syntax

mstp revision *number*

no mstp revision*number*

Command Default

The default MSTP revision number for a device is 0.

Parameters

number

The revision level for MSTP. The MSTP revision number ranges from 0 through 65535.

Modes

Global configuration mode

Usage Guidelines

The MSRP revision number applies to the device that can have many different VLANs that can belong to many different MSTP regions.

The **no** form of the command sets the revision level to 0.

Examples

The following example shows how to set the MSTP revision number for a device.

```
device(config)# mstp revision 4
```

mstp root-protect timeout

Configures a root protection timeout value for MSTP root guard.

Syntax

mstp root-protect timeout *value*

no mstp root-protect timeout

Command Default

MSTP root guard is not enabled.

Parameters

value

Timeout value in seconds. Range is 5 through 600. The default is 30.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of this command to reset the timer to the default.

Examples

History

Release version	Command history
08.0.61	This command was introduced.

mstp scope

Configures VLANs in Multiple Spanning Tee Protocol (MSTP) mode.

Syntax

mstp scope{**all**|**pvst**}

no mstp scope{**all**|**pvst**}

Command Default

No VLAN is under direct MSTP control.

Parameters

all

Configures MSTP on all VLANs.

pvst

Configures MSTP in per-VLAN spanning tree (PVST) mode.

Modes

Global configuration mode

Usage Guidelines

When the **mstp scope all** command is issued, the ports associated to VLANs in which any STP is configured transition to the blocking state. You must enter the **mstp start** command to re-converge the ports, VLANs, and VEs.

MSTP is not operational until the **mstp start** command is configured. You cannot start MSTP+ unless at least one MSTP+ instance of MSTP + is configured.

The **no** form of this command removes the MSTP PVST mode and restores the device to non-MSTP mode.

Examples

The following example configures MSTP mode on all VLANs.

```
device(config)# mstp scope all
```

The following example enables MSTP in PVST mode.

```
device(config)# mstp scope pvst
```

History

Release version	Command history
08.0.20	This command was modified to support the **pvst** keyword.

mstp start

Enables MSTP on the device.

Syntax

mstp start

no mstp start

Command Default

MSTP is disabled by default.

Modes

Global configuration mode

Usage Guidelines

MSTP scope must be enabled on the device before MSTP can be enabled.

The **no** form of the command disables MSTP on a device.

Examples

The following example shows how to start MSTP on the device.

```
device(config)# mstp start
```

mtu-exceed

Configures a port to forward traffic to a port with a smaller MTU size.

Syntax

mtu-exceed { **forward** | **hard-drop** }

no mtu-exceed { **forward** | **hard-drop** }

Command Default

Port does not forward traffic to a port with a smaller MTU size (hard-drop).

Parameters

forward

Configures the port to fragment and forward a packet from a port with a larger MTU to a port with a smaller MTU.

hard-drop

Configures the port to resets to the default and removes the forward function.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command configures the port not to forward traffic to a port with smaller MTU size.

Examples

The following example configures the port to fragment and forward a packet from a port with a larger MTU to a port with a smaller MTU.

```
device(config)# mtu-exceed forward
```

multicast

Sets IGMP for a VLAN, and sets the IGMP mode as active or passive.

Syntax

multicast active

multicast passive

no multicast active

no multicast passive

Command Default

The global IGMP setting is applied.

Parameters

active

Configures IGMP active mode so that the VLAN actively sends out IGMP queries to identify multicast groups on the network, and makes entries in the IGMP table based on the group membership reports it receives.

passive

Configures IGMP passive mode so that the VLAN does not send queries but forwards reports to the router ports that receive queries. When passive mode is configured on a VLAN, queries are forwarded to the entire VLAN.

Modes

VLAN configuration mode

Usage Guidelines

The IGMP mode configured on a VLAN overrides the mode configured globally.

The **no** form of the command restores the default.

Examples

The following example enables IGMP active mode for VLAN 10.

```
device# configure terminal
device(config)# vlan 10
device (config-vlan-10)# multicast active
```

The following example enables IGMP passive mode for VLAN 20.

```
device# configure terminal
device(config)# config vlan 10
device(config-vlan-10)# multicast passive
```

multicast disable-igmp-snoop

Disables IGMP snooping for a specific VLAN when snooping is enabled globally.

Syntax

multicast disable-igmp-snoop

no multicast disable-igmp-snoop

Command Default

The global IGMP snooping setting applies.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command enables IGMP snooping on VLAN when IGMP snooping is enabled globally.

Examples

The following example disables IGMP snooping on VLAN 20.

```
device(config)# vlan 20
device(config-vlan-20)# multicast disable-igmp-snoop
```

multicast disable-pimsm-snoop

Disables PIM Sparse mode (SM) snooping for a specific VLAN when snooping is enabled globally.

Syntax

multicast disable-pimsm-snoop

no multicast disable-pimsm-snoop

Command Default

The global PIM SM snooping setting applies.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the global PIM SM snooping setting.

Examples

This example disables PIM SM snooping on VLAN 20.

```
Device(config)#config vlan 20
Device(config-vlan-20)#multicast disable-pimsm-snoop
```

multicast fast-convergence

Configures a device to listen to topology change events in Layer 2 protocols such as spanning tree, and then send general queries to shorten the convergence time.

Syntax

multicast fast-convergence

no multicast fast-convergence

Command Default

Fast convergence is not configured.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the default; fast convergence is not configured.

If the Layer 2 protocol cannot detect a topology change, fast convergence may not work in some cases. For example, if the direct connection between two devices switches from one interface to another, the Rapid Spanning Tree protocol (802.1w) considers this optimization rather than a topology change. In this example, other devices do not receive topology change notifications, and cannot send queries to speed up the convergence. Fast convergence works well with the regular spanning tree protocol in this case.

Examples

This example configures fast convergence on VLAN 70.

```
Device(config)#vlan 70
Device(config-vlan-70)#multicast fast-convergence
```

multicast fast-leave-v2

Configures fast leave for IGMPv2.

Syntax

multicast fast-leave-v2 [**edge-ports**]

no multicast fast-leave-v2 [**edge-ports**]

Command Default

Fast leave for IGMPv2 is not configured.

Parameters

edge-ports

Specifies that fast-leave-v2 is enabled only on edge ports.

Modes

VLAN configuration mode

Usage Guidelines

When a device receives an IGMPv2 leave message, it sends out multiple group-specific queries. If no other client replies within the waiting period, the device stops forwarding traffic. When the **multicast fast-leave-v2** command is configured, and when the device receives a leave message, it immediately stops forwarding to that port. The device does not send group specific-queries. When the **multicast fast-leave-v2** command is configured on a VLAN, you must not have multiple clients on any port that is part of the VLAN.

In a scenario where two devices connect, the querier device should not be configured for fast-leave-v2 because the port might have multiple clients through the non-querier.

You can configure the **ip multicast leave-wait-time** command to set the number of queries and the waiting period.

The **no** form of the command restores the default.

Examples

The following example configures fast leave for IGMP on VLAN 10.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# multicast fast-leave-v2
```

The following example configures fast leave for IGMPv2 for edge ports only on Vlan 10.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# multicast fast-leave-v2 edge-ports
```

History

Release version	Command history
09.0.00	The **edge-ports** keyword was added.

multicast limit

Configures the maximum number of multicast packets allowed per second and generates infralogs for pps packets.

Syntax

multicast limit*num*

multicast limit*num***kbps**

multicast limit*num***kbpslog**

rate-limit-log*num*

rate-limit-pps-log*num*

multicast limit*num*[**kbps**|**pps**]**threshold***num***actionport-shutdown***num*

no multicast limit*num*

no multicast limit*num***kbps**

no multicast limit*num***kbpslog**

no-rate-limit-log*num*

no rate-limit-pps-log*num*

no multicast limit*num*[**kbps**|**pps**]**threshold***num***actionport-shutdown***num*

Command Default

Multicast rate limiting is disabled.

Parameters

num

Specifies the maximum number of multicast packets per second. For kbps, the value can be from 1 through 1000000. For pps, the value can be from 1 through 8388607.

kbps

Enables byte-based limiting. The value can be 1 to Max Port Speed.
When kbps is not specified, the rate limiting happens in packets per second (pps).

log

Enables Syslog logging when the broadcast limit exceeds *num***kpbs**.

rate-limit-log

Configures the log timer for the kbps ports. The value can be from 1 through 10 minutes. Default value is 5 minutes.

rate-limit-pps-log

Configures the log timer for the pps ports. The value can be from 1 through 600 seconds. Default value is 300 seconds.

threshold*num*

Specifies the packet drop count threshold value. For kbps, valid values range from 1 through 1048576. For pps, valid values range from 1 through 8388607.

action

Specifies further action must be taken.

port-shutdown

Specifies that port shutdown is the action taken.

For pps, the port shutdown value is from 1 through 65535. Default value is 5 minutes.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of the command to disable multicast rate limiting.

Examples

The following example enables a multicast limit of 131072 Kbps.

```
device# configure terminal
device(config)# interface ethernet 9/1/1
device(config-if-e1000-9/1/1)# multicast limit 131072 kbps
```

The following example enables multicast logging when the configured limit exceeds 100 Kbps.

```
device# configure terminal
device(config)# interface ethernet 1/2/1
device(config-if-e1000-1/2/1)# multicast limit 100 kbps log
```

The following example enables the kbps log timer interval to 3 minutes when kbps rate limit is configured.

```
device(config)# rate-limit-log 3
```

The following example enables the pps log timer interval to 200 seconds when pps rate limit is configured.

```
device(config)# rate-limit-pps-log 200
```

The following example sets the packet drop count threshold value to 2000 and specifies that the port shutodwn action is taken.

```
device# configure terminal
device(config)# interface ethernet 1/2/1
device(config-if-e10000-1/2/1)# multicast limit 100 kbps threshold 2000 action port-shutdown 7
```

The following example sets the packet drop count threshold value for pps to 1500 and specifies that the port shutdown action is taken.

```
device(config)# interface ethernet 1/2/3
device(config-if-e10000-1/2/3)#  multicast limit 1500 pps threshold 2000 action port-shutdown 7
```

History

Release version	Command history
08.0.10	The command was introduced.
08.0.40a	The command was modified to include the **log** keyword.
09.0.10	The command was modified to include the **pps** keyword and pps log timer was introduced.

multicast mvr

Enables Multicast VLAN Registration (MVR) on a VLAN.

Syntax

multicast mvr { **source** | **receiver** }

no multicast mvr { **source** | **receiver** }

Command Default

MVR is not enabled by default.

Parameters

source

Configures the VLAN as a source VLAN.

receiver

Configures the VLAN as a receiver VLAN.

Modes

VLAN configuration mode

Usage Guidelines

When you use this command, a VE interface is created if not already configured. The **no** form of the command does not delete the VE interface. TheVE interface is only deleted when you delete the VLAN or delete the VE interface manually.

The **no** form of the command disables MVR on a VLAN.

Examples

The following example configures MVR on a VLAN and assigns untagged receiver ports to the MVLAN.

```
device(config)# vlan 1
device(config-vlan-1)# multicast mvr source
```

History

Release version	Command history
09.0.10	This command was introduced.
09.0.10a	The **receiver-port** option was deprecated.

multicast pimsm-snooping

Enables PIM SM snooping for a specific VLAN.

Syntax

multicast pimsm-snooping [**prune-wait**] *seconds*

no multicast pimsm-snooping [**prune-wait**] *seconds*

Command Default

The global setting is applied.

Parameters

prune-wait *seconds*

Specifies the amount of time a device waits after receiving a PIM prune message before removing the outgoing interface (OIF) from the forwarding entry. The range is 0 to 65535 seconds. The default is 5 seconds.

Modes

VLAN configuration mode

Usage Guidelines

The prune-wait time is necessary on a LAN where multiple receivers could be listening to the group; it gives them time to override the prune message. Configure the **multicast pimsm-snooping** command with the **prune-wait** keyword to modify the prune-wait time according to topology and PIM router configurations.

In accordance with RFC 4601, PIM routers delay pruning for 3.5 seconds by default, so configuring a lower prune-wait value may cause traffic disruption. You should configure a prune-wait value lower than 3.5 seconds only if the topology supports it, for example, if the group has only one receiver, and an immediate prune is needed.

The no form of the command disables PIM SM snooping for the VLAN. The **no** form of the command with the prune-wait keyword restores the default prune-wait time (5 seconds).

Examples

The following example enables PIM SM snooping for VLAN 10.

```
device# configure termnial
device(config)# vlan 10
device(config-vlan-10)# multicast pimsm-snooping
```

The following example configures the prune-wait time to 7 seconds for VLAN 10.

```
device# configure termnial
device(config)# vlan 10
device(config-vlan-10)# multicast pimsm-snooping prune-wait 7
```

History

Release version	Command history
08.0.20	This command was introduced.

multicast port-version

Configures the IGMP version on individual ports in a VLAN.

Syntax

multicast port-version { **2** | **3** } { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no multicast port-version { **2** | **3** } { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

The port uses the IGMP version configured globally or for the VLAN.

Parameters

2
Configures IGMP version 2.

3
Configures IGMP version 3.

ethernet *unit/slot/port* [**to** *unit/slot/port*]
Configures the designated version on the specified Ethernet port (or range of ports).

lag *lag-id* [**to** *lag-id*]
Configures the designated version on the specified LAG (or range of LAGs).

to
Specifies a range of ports or LAGs.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the IGMP version configured globally or for the VLAN.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

See the description of the **ip multicast version** command for information on how to configure the IGMP version globally.

See the description of the **multicast version** command for information on how to configure the IGMP version on a VLAN.

Examples

This example configures ports 1/2/4, 1/2/5, and 1/2/6 to use IGMP version 3.

```
Device(config)# vlan 20
(config-vlan-20)# multicast port-version 3 ethernet 1/2/4 to 1/2/6
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

multicast proxy-off

Turns off proxy activity for static groups.

Syntax

multicast proxy-off

no multicast proxy-off

Command Default

Proxy activity is on.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the default; proxy activity is on.

When a device is configured for static groups, it acts as a proxy and sends membership reports for the static groups when it receives general or group-specific queries. When a static group configuration is removed, the group is deleted from the active group table immediately. However, leave messages are not sent to the querier, and the querier must age out the group. You can configure the **multicast proxy-off** command to turn off proxy activity.

Examples

This example turns off proxy activity for VLAN 20.

```
Device(config)#vlan 20
Device(config-vlan-20)#multicast proxy-off
```

multicast6 querier-address

Configures the IPv6 querier address per VLAN.

Syntax

multicast6 querier-address *X:X::X:X*

no multicast6 querier-address *X:X::X:X*

Parameters

X:X::X:X

Specifies an IPv6 link local address as the multicast querier address.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command disables the IPv6 querier address functionality.

Examples

The following example specifies an IPv6 address as the multicast querier address for the VLAN.

```
device# configure terminal
device(config)# vlan 100
device(config-vlan-100)# multicast6 querier-address FE80::44
```

History

Release version	Command history
08.0.50	This command was introduced.

multicast querier-address

Configures the IPv4 querier address per VLAN.

Syntax

multicast querier-address *A.B.C.D*

no multicast querier-address *A.B.C.D*

Parameters

A.B.C.D

Specifies an IPv4 address as the multicast querier address.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command disables the IPv4 querier address functionality.

Examples

The following example specifies an IPv4 address as the multicast querier address for the VLAN.

```
device# configure terminal
device(config)# vlan 100
device(config-vlan-100)# multicast querier-address 2.2.2.2
```

History

Release version	Command history
08.0.50	This command was introduced.

multicast router-port

Configures a static router Ethernet port or LAG to receive multicast control and data packets.

Syntax

multicast router-port { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no multicast router-port { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

The device forwards all multicast control and data packets only to router ports that receive queries.

Parameters

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Specifies the Ethernet port (or range of ports) you want to force traffic to.

lag *lag-id* [**to** *lag-id*]

Specifies the LAG (or range of LAGs) you want to force traffic to.

to

Specifies a range of ports or LAGs.

Modes

VLAN configuration mode

Usage Guidelines

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of this command restores the default, that is, the device forwards all multicast control and data packets only to router ports that receive queries.

Examples

This example configures a static port on Ethernet 1/1/3 on VLAN 70.

```
device# configure terminal
device(config)# vlan 70
device(config-vlan-70)# multicast router-port ethernet 1/1/3
```

This example configures a list of static ports on VLAN 70.

```
device# configure terminal
device(config)# vlan 70
device(config-vlan-70)# multicast router-port ethernet 1/1/24 ethernet 1/6/24 ethernet 1/8/17
```

This example configures a range of static ports on VLAN 70.

```
device# configure terminal
device(config)# vlan 70
device(config-vlan-70)# multicast router-port ethernet 1/1/1 to 1/1/8
```

This example configures a combined range and list of static ports on VLAN 70.

```
device# configure terminal
device(config)# vlan 70
device(config-vlan-70)# multicast router-port ethernet 1/1/1 to 1/1/8 ethernet 1/1/24 ethernet 1/6/24
ethernet 1/8/17
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

multicast sdvoe

Enables Software Defined Video-over-Ethernet (SDVoE) for an IGMP-snooping-enabled VLAN.

Syntax

multicast sdvoe { **auto-edge-port-track-act** | **auto-edge-port-track-pas** }

no multicast sdvoe { **auto-edge-port-track-act** | **auto-edge-port-track-pas** }

Command Default

SDVoE is disabled for a VLAN.

Parameters

auto-edge-port-track-act

Specifies multicast active, dynamic edge port and IGMPv2 and IGMPv3 client tracking.

auto-edge-port-track-pas

Specifies multicast passive, dynamic edge port and IGMPv2 and IGMPv3 client tracking.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the disables SDVoE for in an IGMP-snooping-enabled VLAN.

Examples

The following example enables SDVOE and configures a multicast active dynamic edge port and IGMPv2 and IGMPv3 client tracking for an IGMP-snooping-enabled VLAN.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10) multicast sdvoe auto-edge-port-track-act
```

The following example enables SDVOE and configures a multicast passive dynamic edge port and IGMPv2 and IGMPv3 client tracking for an IGMP-snooping-enabled VLAN.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10) multicast sdvoe auto-edge-port-track-pas
```

History

Release version	Command history
09.0.00	This command was introduced.

multicast static-group

Configures a static IGMP group for a VLAN.

Syntax

multicast static-group *ipv4-address* [**count** *num*] { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no multicast static-group *ipv4-address* [**count** *num*] { **lag** *lag-id* [**to** *lag-id*] | **ethernet** *unit/slot/port* [**ethernet** *unit/slot/port* | **to** *unit/slot/port*] | **management** { *unit/slot/port* | *management-id* } }

Command Default

The VLAN cannot forward multicast traffic to ports that do not receive IGMP membership reports.

Parameters

ipv4-address
: Specifies the address of the static group.

count *num*
: Specifies a contiguous range of groups.

ethernet *unit/slot/port* [**to** *unit/slot/port*]
: Specifies a port or a range of ports to be included in the group.

LAG *lag-id* [**to** *lag-id*]
: Specifies the LAG or range of LAGs to be included in the group.

Modes

VLAN configuration mode

Usage Guidelines

A snooping-enabled VLAN cannot forward multicast traffic to ports that do not receive IGMP membership reports. You can configure the **multicast static-group** command to create a static group that applies to specific ports, allowing packets to be forwarded to them even though they have no client membership reports.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of this command removes the static group from the VLAN.

Examples

This example configures a static group on VLAN 20 that contains ports 1/1/3 and 1/1/5 to 1/1/7.

```
device# configure terminal
device(config)# vlan 20
device(config-vlan-20)# multicast static-group 224.1.1.1 count 2 ethernet 1/1/3 ethernet 1/1/5 to 1/1/7
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

multicast static-grp-fwd-disable

Disables multicast static group forwarding at the VLAN level.

Syntax

multicast static-grp-fwd-disable

no multicast static-grp-fwd-disable

Command Default

By default, multicast static group forwarding is enabled.

Modes

VLAN configuration sub-mode

Usage Guidelines

The **no** form of the **multicast static-grp-fwd-disable** command removes the configuration from the VLAN.

The **multicast static-grp-fwd-disable** command is supported only for IGMP version 2.

The **multicast static-grp-fwd-disable** command disables the addition of static-group-based outbound interfaces to mcache. The command can be used in conjunction with proxy configuration to generate proxy reports for static groups and eliminate traffic from the ICX router to reduce join latency.

With this configuration, a proxy module pulls traffic for affected static groups from the ICX router but does not forward the traffic to recipients configured in the static group. The traffic is forwarded only when IGMP report messages are received from the recipients.

Examples

The following example disables multicast static group forwarding on VLAN 100.

```
device# configure terminal
device(config)# vlan 100
device(config-vlan-100)# multicast static-grp-fwd-disable
device(config-vlan-100)
```

History

Release version	Command history
09.0.10	This command was introduced.

multicast static-mcache profile

Selects a profile for adding multicast addresses to the HW forwarding database.

Syntax

multicast static-mcache profile *profile-id*

no multicast static-mcache profile *profile-id*

Command Default

A profile is not selected.

Parameters

profile-id

Specifies a profile. Valid values range from 1 through 10.

Modes

Global configuration mode

Usage Guidelines

Up to ten profiles are supported.

When SDVoE is enabled for a VLAN, a default profile is added automatically and static mcaches are created for the groups in the default profile. If you want packets for some multicast groups to be flooded in the hardware, you can add mcaches statically for those groups, either to flood or drop those packets.

The **no** form of the command removes a profile.

Examples

The following example adds a profile for adding IP Multicast addresses to the HW forwarding database.

```
device# configure terminal
device(config)# multicast static-mcache profile 8
```

History

Release version	Command history
09.0.00	This command was introduced.

multicast tracking

Enables tracking and fast leave on VLANs.

Syntax

multicast tracking

no multicast tracking

Command Default

Tracking and fast leave are disabled.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the default, that is, tracking and fast leave are disabled.

The membership tracking and fast leave features are supported for IGMP V3 only. If any port or any client is not configured for IGMP V3, the multicast tracking command is ignored.

Examples

This example enables tracking and fast leave on VLAN 20.

```
Device(config)#vlan 20
Device(config-vlan-20)#multicast tracking
```

multicast version

Configures the IGMP version for snooping on a VLAN.

Syntax

multicast version [**2** | **3**]

no multicast version

Command Default

The globally-configured IGMP version is used.

Parameters

2

Configures IGMP version 2.

3

Configures IGMP version 3.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the globally configured version.

If an IGMP version is configured for an individual port, that port uses the version configured for it, not the VLAN version.

See the description of the **ip multicast version** command for information on how to configure the IGMP version globally.

See the description of the **multicast port-version** command for information on how to configure the IGMP version on an individual port

Examples

This example configures IGMP version 3 on VLAN 20.

```
Device(config)#vlan 20
Device(config-vlan-20)#multicast version 3
```

multicast6

Configures the multicast listening discovery (MLD) mode on the device to active or passive.

Syntax

multicast6 [**active** | **passive**]

no multicast6 [**active** | **passive**]

Command Default

MLD mode is passive.

Parameters

active

Configures MLD active mode, that is, the device actively sends out MLD queries to identify IPv6 multicast groups on the network, and makes entries in the MLD table based on the group membership reports it receives from the network.

passive

Configures MLD passive mode, that is, the device forwards reports to router ports that receive queries. MLD snooping in the passive mode does not send queries. However, it does forward queries to the entire VLAN.

Modes

VLAN configuration mode

Usage Guidelines

The MLD mode configured on a VLAN overrides the mode configured globally.

The **no** form of this command returns the device to the previous MLD mode.

Examples

The following example configures MLD mode as active on VLAN 20.

```
device(config)# vlan 20
device(config-vlan-20)# multicast6 active
```

multicast6 disable-mld-snoop

Disables multicast listening discovery (MLD) snooping for a specific VLAN when snooping is enabled globally.

Syntax

multicast6 disable-multicast-snoop

no multicast6 disable-multicast-snoop

Command Default

The global MLD snooping setting applies.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the global MLD snooping setting.

Examples

This example disables MLD snooping on VLAN 20.

```
Device(config)#vlan 20
Device(config-vlan-20)#multicast6 disable-multicast-snoop
```

multicast6 disable-pimsm-snoop

When PIM6 SM snooping is enabled globally, overrides the global setting and disables it for a specific VLAN.

Syntax

multicast6 disable-pimsm-snoop

no multicast6 disable-pimsm-snoop

Command Default

The globally configured PIM6 SM snooping applies.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the globally configured PIM6 SM snooping.

The device must be in multicast listening discovery (MLD) passive mode before PIM6 SM snooping can be disabled.

Examples

This example enables PIM6 SM traffic snooping on VLAN 20.

```
Device(config)# vlan 20
Device(config-vlan-20)#multicast6 disable-pimsm-snoop
```

multicast6 fast-convergence

Configures a device to listen to topology change events in Layer 2 protocols such as spanning tree, and then send general queries to shorten the convergence time.

Syntax

multicast6 fast-convergence

no multicast6 fast-convergence

Command Default

Fast convergence is not configured.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the default; fast convergence is not configured.

Configure the **multicast6 fast-convergence** command to allow a device to listen to topology change events in Layer 2 protocols, such as Spanning Tree, and send general queries to shorten the convergence time.

If the Layer 2 protocol cannot detect a topology change, fast convergence may not work in some cases. For example, if the direct connection between two devices switches from one interface to another, the Rapid Spanning Tree protocol (802.1w) considers this to be optimization rather than a topology change. In this case, other devices do not receive topology change notifications and cannot send queries to speed up convergence. The original spanning tree protocol does not recognize optimization actions, and fast convergence works in all cases.

Examples

This example configures fast convergence on VLAN 70.

```
device# configure terminal
device(config)# vlan 70
device(config-vlan-70)# multicast6 fast-convergence
```

multicast6 fast-leave-v1

Configures fast leave for multicast listening discovery Version 1 (MLDv1)

Syntax

multicast6 fast-leave-v1

no multicast6 fast-leave-v1

Command Default

The device forwards traffic to a port immediately upon receiving a leave message.

Modes

VLAN configuration mode

Usage Guidelines

When the **multicast6 fast-leave-v1** command is configured on a VLAN, make sure you do not have multiple clients on any port that is part of the VLAN. When two devices connect, the querier device should not have the **multicast6 fast-leave-v1** command configured because the port might have multiple clients through the non-querier.

You can configure the **ipv6 multicast leave-wait-time** command to configure the number of queries and the waiting period in seconds.

The **no** form of this command restores the device to forward traffic to a port immediately upon receiving a leave message. The device sends group-specific queries.

Examples

The following example configures fast leave for MLDv1 on VLAN 20.

```
device(config)# vlan 20
device(config-vlan-20)# multicast6 fast-leave-v1
```

multicast6 pimsm-snooping

Enables PIM6 SM traffic snooping on a VLAN.

Syntax

multicast6 pimsm-snooping [**prune-wait** *time*]

no multicast6 pimsm-snooping [**prune-wait** *time*]

Command Default

PIM6 SM traffic snooping is disabled.

Parameters

prune-wait *time*

Configures the amount of time a device waits after receiving a PIM prune message before removing the outgoing interface (OIF) from the forwarding entry. The value can be 0 to 30 seconds. The default is 5 seconds.

Modes

VLAN configuration mode

Usage Guidelines

The device must be in multicast listening discovery (MLD) passive mode before it can be configured for PIM6 sparse mode (SM) snooping.

When PIM6 SM snooping is enabled globally, you can override the global setting and disable it for a specific VLAN. You must configure the **multicast6 disable-pimsm-snoop** command to disable PIM6 SM snooping on a VLAN.

A smaller prune wait value reduces flooding of unwanted traffic. A prune wait value of zero causes the PIM device to stop traffic immediately upon receiving a prune message. If there are two or more neighbors on the physical port, then the **prune-wait** option should not be used because one neighbor may send a prune message while the other sends a join message at the same time, or within less than five seconds.

The **no** form of this command without options disables PIM6 SM traffic snooping on a VLAN. The **no** form of the command with the **prune-wait** option resets the prune-wait time as 5 seconds.

Examples

The following example first configures VLAN 20 and adds the ports that are connected to the device and host in the same port-based VLAN . Then it enables MLD snooping passive on VLAN 20 and enables PIM6 SM traffic snooping on it. The prune-wait timer is set as 10 seconds.

```
device(config)# vlan 20
device(config-vlan-20)# untagged ethernet 1/1/5 ethernet 1/1/7 ethernet 1/1/11
device(config-vlan-20)# multicast6 passive
device(config-vlan-20)# multicast6 pimsm-snooping
device(config-vlan-20)# multicast6 pimsm-snooping prune-wait 10
```

multicast6 port-version

Configures the multicast listening discovery (MLD) version on individual ports in a VLAN.

Syntax

multicast6 port-version { **1** | **2** } { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no multicast6 port-version { **1** | **2** } { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

The port uses the MLD version configured globally or for the VLAN.

Parameters

1

Configures MLD version 1.

2

Configures MLD version 2.

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Specifies the port (or range of ports) to configure the version on. You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

lag *lag-id* [**to** *lag-id*]

Configures the designated version on the specified LAG (or range of LAGs).

to

Specifies a range of ports or LANs.

Modes

VLAN configuration mode

Usage Guidelines

When you configure the MLD version on a specified port or range of ports, the other ports use the MLD version specified with the **multicast6 version** command, or the globally configured MLD version.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of this command restores the MLD version configured globally or for the VLAN.

Examples

This example configures ports 1/1/4, 1/1/5, 1/1/6, and 1/2/1 on VLAN 20 to use MLD version 2.

```
Device(config)# vlan 20
Device(config-vlan-20)# multicast6 port-version 2 ethernet 1/2/1 ethernet 1/1/4 to 1/1/6
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

multicast6 proxy-off

Turns off multicast listening discovery (MLD) proxy activity.

Syntax

multicast6 proxy-off

no multicast6 proxy-off

Command Default

MLD snooping proxy activity is on.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the default; proxy activity is on.

When a device is configured for static groups, it acts as a proxy and sends membership reports for the static groups when it receives general or group-specific queries. When a static group configuration is removed, the group is deleted from the active group table immediately. However, leave messages are not sent to the querier, and the querier must age out the group. You can configure the **multicast proxy-off** command to turn off proxy activity.

Examples

This example turns off proxy activity for VLAN 20.

```
Device(config)#vlan 20
Device(config-vlan-20)#multicast6 proxy-off
```

multicast6 router-port

Configures a static router port to receive IPv6 multicast control and data packets.

Syntax

multicast6 router-port { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no multicast6 router-port { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

The device forwards all IPv6 multicast control and data packets only to router ports that receive queries.

Parameters

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Specifies the Ethernet port, port list, or range of ports you want to force traffic to.

lag *lag-id* [**to** *lag-id*]

Specifies the LAG, set of LAGs, or range of LAGs you want to force traffic to.

to

Specifies a range of ports or LAGs.

Modes

VLAN configuration mode

Usage Guidelines

All multicast control and data packets are forwarded to router ports that receive queries. Although router ports are learned, you can configure static router ports to force multicast traffic to specific ports, even though these ports never receive queries.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of this command restores the default, that is, the device forwards all multicast control and data packets only to router ports that receive queries.

Examples

This example configures a range and a list of static ports on VLAN 70.

```
device# configure terminal
device(config)# vlan 70
device(config-vlan-70)# multicast6 router-port ethernet 1/1/1 to 1/1/8 ethernet 1/1/24 ethernet 1/6/24
ethernet 1/8/17
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

multicast6 static-group

Configures a static multicast listening discovery (MLD) group for a VLAN.

Syntax

multicast6 static-group *ipv6-address* [**count** *num*] { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no multicast6 static-group *ipv6-address* [**count** *num*] { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Command Default

The VLAN cannot forward multicast traffic to ports that do not receive MLD membership reports.

Parameters

ipv6-address
Specifies the IPv6 address of the multicast group.

count *num*
Specifies a contiguous range of groups. The default is 1.

ethernet *unit/slot/port* [**to** *unit/slot/port*]
Specifies a port, set of ports, or range of ports to be included in the group.

lag *lag-id* [**to** *lag-id*]
Specifies a LAG, set of LAGs, or range of LAGs to be included in the group.

Modes

VLAN configuration mode

Usage Guidelines

A snooping-enabled VLAN cannot forward multicast traffic to ports that do not receive MLD membership reports. To allow clients to send reports, you can configure a static group that applies to individual ports on the VLAN. The static group forwards packets to the static group ports even if they have no client membership reports.

You cannot configure a static group that applies to an entire VLAN.

The maximum number of supported static groups in a VLAN is 512, and the maximum number of supported static groups for individual ports in a VLAN is 256.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of this command removes the static group fromr the VLAN.

Examples

This example configures on VLAN 20 a static group containing ports 1/1/3 and 1/1/5 to 1/1/7.

```
Device(config)# vlan 20
(config-vlan-20)# multicast6 static-group ff05::100 count 2 ethernet 1/1/3 ethernet 1/1/5 to 1/1/7
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

multicast6 tracking

Enables tracking and fast leave for IPv6 multicast listening discovery Version 2 (MLDv2) on VLANs.

Syntax

multicast6 tracking

no multicast6 tracking

Command Default

Tracking and fast leave are disabled.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of this command restores the default, that is, tracking and fast leave are disabled.

The membership tracking and fast leave features are supported for MLDv2 only. If any port or any client is not configured for MLDv2, the multicast tracking command is ignored.

Examples

This example enables tracking and fast leave on VLAN 20.

```
Device(config)#vlan 20
Device(config-vlan-20)#multicast6 tracking
```

multicast6 version

Configures the multicast listening discovery (MLD) version for snooping on a VLAN.

Syntax

multicast6 version { **1** | **2** }

no multicast6 version { **1** | **2** }

Command Default

The globally configured MLD version is configured.

Parameters

1

Configures MLD Version 1.

2

Configures MLD Version 2.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the globally configured MLD version.

If an MLD version is specified for individual ports, these ports use that version instead of the version specified for the VLAN.

Examples

This example specifies MLD Version 2 on VLAN 20.

```
Device(config)# vlan 20
Device(config-vlan-20)#multicast6 version 2
```

multipath

Changes load sharing to apply to only iBGP or eBGP paths, or to support load sharing among paths from different neighboring autonomous systems.

Syntax

multipath { **ebgp** | **ibgp** | **multi-as** }

no multipath { **ebgp** | **ibgp** | **multi-as** }

Parameters

ebgp

Enables load sharing of eBGP paths only.

ibgp

Enables load sharing of iBGP paths only.

multi-as

Enables load sharing of paths from different neighboring autonomous systems.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

By default, when BGP load sharing is enabled, both iBGP and eBGP paths are eligible for load sharing, while paths from different neighboring autonomous systems are not.

The **no** form of the command restores the default.

Examples

The following example changes load sharing to apply to iBGP paths in the IPv4 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# multipath ibgp
```

The following example enables load sharing of paths from different neighboring autonomous systems in the IPv6 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# multipath multi-as
```

The following example changes load sharing to apply to eBGP paths in a nondefault VRF instance in the IPv4 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# multipath ebgp
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

multi-stack-port

Converts both ends of a trunked link between stacking trunks in a traditional stack to links between untrunked ports.

Syntax

multi-stack-port ethernet *stack-unit / slot/ port***and ethernet** *stack-unit / slot / port*

no multi-stack-port ethernet *stack-unit / slot/ port* **and ethernet** *stack-unit /slot / port*

Parameters

ethernet
Specifies Ethernet as the interface type.

stack-unit
Specifies the stack unit ID.

slot
Specifies the slot number.

port
Specifies the port number in the slot.

Modes

Stack unit configuration mode

Usage Guidelines

The **no** form of the command removes the stack-ports.

Use this command only when the trunk is live.

Only primary stacking ports can be designated in the command.

Examples

The following example converts the stacking trunk between stack unit 3 and stack unit 4 to a link between untrunked ports.

```
device# configure terminal
device(config)# stack unit 1
device(config-unit-3)# multi-stack-port ethernet 3/2/1 and ethernet 4/2/1
```

History

Release	Command History
08.0.00a	This command was introduced. This command replaces the **multi-port** command.

Release	Command History
09.0.00	The command was modified to include the keyword **ethernet** before the port number.

multi-stack-trunk

Creates both ends of a multi-port stacking trunk on a live stack.

Syntax

multi-stack-trunk ethernet *stack-unit/slot/port* **to** *stack-unit/slot/port* **and ethernet** *stack-unit/slot/port* **to** *stack-unit/slot/port*

no multi-stack-trunk ethernet *stack-unit/slot/port* **to** *stack-unit/slot/port* **and ethernet** *stack-unit/slot/port* **to** *stack-unit/slot/port*

Parameters

ethernet *stack-unit/slot/port*

Specifies an Ethernet interface to include in the stack-trunk.

Modes

Stack unit configuration mode

Usage Guidelines

Use the command only when the trunk is live.

The first port in a stack trunk must be an odd-numbered primary port, for example, 3/2/1.

The **no** form of this command removes the trunk configuration.

Examples

The following example converts two non-trunked links between stack unit 3 and stack unit 4 into a stacking trunk. The stacking trunk connects ports 3/2/1 and 3/2/2 on stack unit 3 and ports 4/2/1 and 4/2/2 on stack unit 4.

```
device# configure terminal
device(config)# stack unit 1
device(config-unit-1)# multi-stack-trunk ethernet 3/2/1 to 3/2/2 and ethernet 4/2/1 to 4/2/2
```

History

Release	Command History
08.0.00a	This command was introduced. This command replaces the **multi-trunk** command.
09.0.00	The command was modified to include the keyword **ethernet** before the first port number in a range.

mvrp applicant-mode

Configures the applicant state of the port that defines the Multiple VLAN Registration Protocol (MVRP) participation of the port.

Syntax

mvrp applicant-mode { **non-participant** | **normal-participant** }

Command Default

The applicant mode of the port is as a normal participant.

Parameters

non-participant

Sets the MVRP applicant state of the port to non-participant mode and prohibits MVRP PDU transmission on the port.

normal-participant

Resets the MVRP applicant state of the port to participant mode and continues VLAN registration and propagation of VLAN information.

Modes

Interface configuration mode

Usage Guidelines

The applicant state of the access ports must be set as non-participant to ensure that MVRP PDUs are not exchanged on those ports.

The **no** form of the command is non-operational.

Examples

The following example configures the MVRP applicant state of the port to non-participant mode.

```
device# configure terminal
device(config)# interface ethernet 1/1/25
device(config-if-e1000-1/1/25)# mvrp applicant-mode non-participant
```

History

Release version	Command history
08.0.90	This command was introduced.

mvrp enable

Enables Multiple VLAN Registration Protocol (MVRP) at the system level.

Syntax

mvrp enable

no mvrp enable

Command Default

MVRP is disabled by default.

Modes

Global configuration mode

Usage Guidelines

MVRP must be enabled globally to allow the device to participate in the protocol.

The **no** form of the command disables MVRP and removes all MVRP configurations from the system.

Examples

The following example enables MVRP at the system level.

```
device# configure terminal
device(config# mvrp enable
```

History

Release version	Command history
08.0.90	This command was introduced.

mvrp enable (Interface)

Enables Multiple VLAN Registration Protocol (MVRP) on an interface or on multiple physical interfaces.

Syntax

mvrp enable

no mvrp enable

Command Default

MVRP is disabled by default.

Modes

Interface configuration mode

Usage Guidelines

MVRP must be enabled globally to allow the device to participate in the protocol.

The **no** form of the command disables MVRP on the specified interface or set of interfaces.

Examples

The following example enables MVRP on an interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/25
device(config-if-e1000-1/1/25)# mvrp enable
```

The following example enables MVRP on multiple physical interfaces.

```
device# configure terminal
device(config)# interface ethernet 1/1/5 to 1/1/10
device(config-mif-1/1/5-1/1/10)# mvrp enable
```

History

Release version	Command history
08.0.90	This command was introduced.

mvrp point-to-point

Configures a point-to-point interface for Multiple VLAN Registration Protocol (MVRP).

Syntax

mvrp point-to-point

no mvrp point-to-point

Command Default

A point-to-point interface is not enabled by default.

Modes

Interface configuration mode

Usage Guidelines

If the MVRP-enabled port is connected to a shared media, the port must be configured as non Point-to-point mode using the **no mvrp point-to-point** command.

The **no** form of the command sets the interface to non-point-to-point mode.

Examples

The following example configures a point-to-point interface for MVRP.

```
device# configure terminal
device(config)# interface ethernet 1/1/25
device(config-if-e1000-1/1/25)# mvrp point-to-point
```

History

Release version	Command history
08.0.90	This command was introduced.

mvrp registration-mode forbidden

Forbids the VLAN from participating in Multiple VLAN Registration Protocol (MVRP) and neither declares nor registers any VLANs on the port, ignoring all the registration messages received for those VLANs.

Syntax

mvrp registration-mode forbidden vlan *vlan-id* [**to** *vlan-id*]

no mvrp registration-mode forbidden vlan *vlan-id* [**to** *vlan-id*]

Command Default

By default, registration mode is set to Normal which allows the VLAN to be learned or declared through MVRP. For a static VLAN configuration, registration mode is automatically set to Fixed.

Parameters

vlan *vlan-id*

Adds the VLAN to the forbidden list and ignores all the registration messages received for the VLAN.

to *vlan-id*

Specifies the range of VLANs to be added to the forbidden list for an MVRP participant.

Modes

Interface configuration mode

LAG interface mode

Usage Guidelines

The **no** form of the command sets the registration mode to Normal.

Examples

The following example adds VLAN 101 to the forbidden list for an MVRP participant.

```
device# configure terminal
device(config)# interface lag 1
mvrp-dut2(config-lag-if-lg1)# mvrp registration-mode forbidden vlan 101
```

History

Release version	Command history
08.0.90	This command was introduced.

mvrp timer

Defines the interval at which Multiple VLAN Registration Protocol (MVRP) updates (VLAN join or VLAN leave messages) are transmitted at the system level or interface level to be used for the particular MVRP instance.

Syntax

mvrp timer join *timer-value* **leave** *timer-value* **leave-all** *timer-value*

no mvrp timer join *timer-value* **leave** *timer-value* **leave-all** *timer-value*

Command Default

The following are the default values:

- Join timer: 200ms
- Leave timer: 1000ms
- Leave-all timer: 10000ms

Parameters

join *timer-value*

Defines the interval for the MVRP PDU transmit that makes VLAN declaration on other MVRP-enabled interfaces. Valid values range from 200 ms through 100000000 ms. The default value is 200 ms.

leave *timer-value*

Defines the time period an MVRP-enabled interface waits after receiving a leave message on the port to remove the port from the VLAN indicated in the leave message. If the interface receives a VLAN join message before the timer expires, the VLAN remains registered. Valid values range from 1000 ms through 100000000 ms. The default value is 100 ms. The leave timer should be greater than or equal to twice the join timer plus 600 ms.

leave-all *timer-value*

Defines the time interval at which a port (MVRP participant) generates LeaveAll PDUs. Valid values range from 10000 ms through 100000000 ms. The default value is 10000 ms. The leave-all timer must be comparitively greater than the leave timer value; the recommended value is at least three times the value of the leave timer.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

All timer values must be in multiples of 10, 50, or 100 ms.

The MVRP timers must be set to the same values on all the devices that are participating in MVRP.

Interface-level timer configuration takes precedence over global timer configurations.

Ruckus recommends to maintain the default timer settings for MVRP implementation unless it is necessary to change.

The **no** form of the command resets the timer values to the default values.

Examples

The following example enables the MVRP timers globally.

```
device# configure terminal
device(config)# mvrp timer join 300 leave 3000 leave-all 20000
```

The following example enables the MVRP timers on an interface.

```
device# configure terminal
device(config)# interface ethernet 2/1/25
device(config-if-e1000-2/1/25)# mvrp timer join 300 leave 1500 leave-all 15000
```

History

Release version	Command history
08.0.90	This command was introduced.

mvrp spanning-tree

Configures the Multiple VLAN Registration Protocol (MVRP) dynamic VLANs to be enabled with the Spanning Tree Protocol (STP) or Rapid Spanning Tree Protocol (RSTP).

Syntax

mvrp spanning-tree [**802-1w**]

no mvrp spanning-tree [**802-1w**]

Command Default

By default, all MVRP dynamic VLANs are STP-enabled.

Parameters

802-1w

Configures the MVRP dynamic VLAN to be RSTP-enabled.

Modes

Global configuration mode

Usage Guidelines

You can configure this command before MVRP is enabled on any interface, but this configuration cannot be changed when MVRP is enabled on any port.

All the MVRP-enabled ports must have the same untagged VLAN membership. Consequently, the untagged VLAN membership of MVRP-enabled ports cannot be changed during MVRP operation. Therefore, the following operations issue an error message:

- Configuring an MVRP-enabled untagged port on a different VLAN
- Removing an MVRP untagged VLAN
- Enabling MVRP on a port with untagged membership of a different VLAN

The **no** form of the command blocks the MVRP dynamic VLANs from running spanning tree instances.

Examples

The following example configures MVRP dynamic VLANs to be RSTP-enabled.

```
device# configure terminal
device(config)# mvrp spanning tree 802-1w
```

History

Release version	Command history
08.0.95	This command was introduced.

mvrp vlan-creation-disable

Disables dynamic VLAN creation by Multiple VLAN Registration Protocol (MVRP) unless the VLAN that is being learned is already defined in the device.

Syntax

mvrp vlan-creation-disable

no mvrp vlan-creation-disable

Command Default

When MVRP is enabled, a statically created VLAN is dynamically learned on the MVRP-enabled ingress ports.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command allows the MVRP-enabled ports to create VLANs dynamically.

Examples

The following example disables dynamic VLAN creation by MVRP.

```
device# configure terminal
device(config)# mvrp vlan-creation-disable
```

History

Release version	Command history
08.0.90	This command was introduced.

Commands N

name (MRP)

Configures the name for the metro ring.

Syntax

name *string*

no name *string*

Command Default

Metro ring names are not configured.

Parameters

string

Specifies the name for the metro ring. The name is an ASCII string and can be up to 64 characters in length and include blank spaces.

Modes

MRP configuration mode

Usage Guidelines

The name is optional for a metro ring. If you use a name that has blank spaces, enclose the name in double quotation marks, for example, "Customer A".

The **no** form of the command removes the name for the metro ring.

Examples

The following example configures the name for a metro ring.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-1)# name CustomerA
```

nbr-timeout

Configures the interval after which a PIM device considers a neighbor to be absent.

Syntax

nbr-timeout *seconds*

no nbr-timeout *seconds*

Command Default

The timeout interval is 105 seconds.

Parameters

seconds

Specifies the interval, in seconds. The range is 35 through 65535 seconds. The default is 105 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the default timeout interval, 105 seconds.

You should set the interval to be not less than 3.5 times the hello timer value.

Examples

This example configures a PIM neighbor timeout value of 360 seconds on all ports on a device operating with PIM.

```
Device(config)# router pim
Device(config-pim-router)# nbr-timeout 360
```

neighbor (RIP)

Configures RIP neighbor filter to specify RIP routes to be learned and advertised.

Syntax

neighbor *filter-num* { **permit** | **deny** } { **any** | *ip-address* }

no neighbor *filter-num* { **permit** | **deny** } { **any** | *ip-address* }

Command Default

Initially, by default, the device learns all RIP routes from all neighbors and advertises all routes to all neighbors. Once you have defined a filter that permits learning from a RIP neighbor, the default changes so that the device denies all other RIP neighbors except those specified.

Parameters

filter-num
: Filter index number, a decimal value from 1 through 64.

permit
: Allows routes to be learned and advertised for designated IP address or for any IP address, depending on configuration.

deny
: Prevents routes from being learned or advertised for designated IP address or for any IP address, depending on configuration.

any
: Indicates configured action is to be applied to all IP addresses.

ip-address
: Specifies an IP address to which the filter applies.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command deactivates the filter.

You may require more than one filter to obtain the results you want. For example, if you create a filter to allow or deny a specific IP address, you must create additional filters to allow route learning and advertisement for any other IP addresses.

To avoid conflicting actions, give the filter with the highest priority the highest filter number. Typically, you would add the priority filter last. For example, If you want to deny only one IP address, you must create a second filter with a higher number (priority) to allow any others.

Examples

The following example configures the RIP router so that no RIP routes are learned or advertised for any neighbor.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# neighbor 1 deny any
```

The following example configures the RIP router to learn and advertise routes for all neighbors except neighboring IP address 10.70.12.104. Note the second filter is required and must have a higher filter number.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# neighbor 2 deny 10.70.12.104
device(config-rip-router)# neighbor 64 permit any
```

neighbor activate

Enables the exchange of information with BGP neighbors and peer groups.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **activate**

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **activate**

Command Default

Enabling address exchange for the IPv6 address family is disabled.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies a peer group.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

The **no** form of the command disables the exchange of an address with a BGP neighbor or peer group.

Examples

The following example establishes a BGP session with a neighbor with the IPv6 address 2001:2018:8192::125.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 activate
```

The following example establishes a BGP session with a neighbor with the IPv6 address 2001:2018:8192::125 for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 activate
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor advertisement-interval

Enables changes to the interval over which a specified neighbor or peer group holds route updates before forwarding them.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **advertisement-interval** *seconds*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **advertisement-interval**

Parameters

ip-address
: IPv4 address of the neighbor.

ipv6-address
: IPv6 address of the neighbor.

peer-group-name
: Peer group name configured by the **neighbor** *peer-group-name* command.

seconds
: Range is from 0 through 3600. The default is 0.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command restores the default interval.

Examples

The following example changes the BGP4 advertisement interval from the default to 60 seconds.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 advertisement-interval 60
```

The following example changes the BGP4+ advertisement interval from the default for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 advertisement-interval 60
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor allowas-in

Disables the AS_PATH check function for routes learned from a specified location so that BGP does not reject routes that contain the recipient BGP speaker's AS number.

Syntax

neighbor {*ip-address* | *ipv6-address* | *peer-group-name* } **neighbor allowas-in** *number*

no neighbor allowas-in {*ip-address* | *ipv6-address* | *peer-group-name* } **neighbor allowas-in** *number*

Command Default

The AS_PATH check function is enabled and any route whose path contains the speaker's AS number is rejected as a loop.

Parameters

ip-address
: Specifies the IP address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies a peer group.

number
: Specifies the number of times that the AS path of a received route may contain the recipient BGP speaker's AS number and still be accepted. Valid values range from 1 through 10.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

The **no** form of the command re-enables the AS_PATH check function.

Examples

The following example specifies that the AS path of a received route may contain the recipient BGP speaker's AS number three times and still be accepted.

```
device#configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 allowas-in 3
```

neighbor ao

Enables TCP-AO support for BGP neighbors.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } *keychain-name*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } *keychain-name*

Command Default

TCP-AO support is not enabled.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies theIPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor peer-group** command.

keychain-name
: Specifies the keychain.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

BGP neighbor sessions must be cleared for the keychain configuration to take effect.

Any configurational change in the TCP-AO keychain used by a BGP neighbor may cause existing sessions to flap. Similarly, removing or replacing the existing keychain configured for a BGP neighbor can also cause the sessions to flap. In the case of key expiry cases, the next best active key is considered. If there are no other active keys present, the expired key is kept until another new active key is configured. The removal of the active key-id or mandatory parameter configurations are considered as key expiry.

The **no** form of the command disables TCP-AO support for BGP neighbors.

Examples

The following example enables TCP-AO support for a BGP neighbor with the IP address 12.0.0.1.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# local-as 20
device(config-bgp-router)# neighbor 12.0.0.1 remote-as 10
device(config-bgp-router)# neighbor 12.0.0.1 ao bgp-msdp
```

History

Release version	Command history
09.0.10	This command was introduced.

neighbor as-override

Replaces the autonomous system number (ASN) of the originating device with the ASN of the sending BGP device.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **as-override**

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **as-override**

Parameters

ip-address
IPv4 address of the neighbor.

ipv6-address
IPv6 address of the neighbor.

peer-group-name
Peer group name configured by the **neighbor** *peer-group-name* command.

Modes

BGP configuration mode

Usage Guidelines

BGP loop prevention verifies the ASN in the AS path. If the receiving router sees its own ASN in the AS path of the received BGP packet, the packet is dropped. The receiving router assumes that the packet originated from its own AS and has reached the place of origination. This can be a significant problem if the same ASN is used among various sites, preventing sites with identical ASNs from being linked by another ASN. In this case, routing updates are dropped when another site receives them.

Examples

The following example replaces the ASN globally.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 as-override
```

neighbor bfd

Enables Bidirectional Forwarding Detection (BFD) sessions for specified Border Gateway Protocol (BGP) neighbors or peer groups, and configures BFD session parameters.

Syntax

neighbor{*ip-address*|*ipv6-address*|*peer-group-name*}**bfd**[**disable**|**holdover-interval***time*|**min-tx***transmit-time***min-rx***receive-time***multiplier***number*|**passive**]

no neighbor{*ip-address*|*ipv6-address*|*peer-group-name*}**bfd**[**disable**|**holdover-interval***time*|**min-tx***transmit-time***min-rx***receive-time***multiplier***number*|**passive**]

Command Default

BFD is not configured for BGP neighbors.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies theIPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor peer-group** command.

disable
: Disables BFD for a specified neighbor or peer group.

holdover-interval*time*
: Specifies the time interval for which BGP routes are withdrawn after the BFD session is declared down. Valid values range from range 3 through 150.

min-tx*transmit-time*
: Specifies the interval, in milliseconds, a device waits to send control packets to BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

min-rx*receive-time*
: Specifies the interval, in milliseconds, a device waits to receive control packets from BFD peers. Valid values range from 50 through 50000 milliseconds. The default is 300.

multiplier*number*
: Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD determines that the connection to that peer is down. Valid values range from 2 through 50. The default is 3.

passive
: Specifies that the BFD session operates in passive mode.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

The no form of the **neighbor**{*ip-address*|*ipv6-address*|*peer-group-name*}**bfddisable** command disables BFD for a specified neighbor or peer-group.

The no form of the **neighbor**{*ip-address*|*ipv6-address*|*peer-group-name*}**bfdholdover-interval** command removes the configured holdover-interval for a BGP neighbor or peer group. If BFD is enabled at peer group or VRF level, the BFD session for this peer inherits them in that order.

The no form of the **neighbor**{*ip-address*|*ipv6-address*|*peer-group-name*}**bfdmin-tx***transmit-time***min-rx***receive-time***multiplier***number*] command reverts BFD parameters to their default values for a BGP neighbor or peer group . If BFD is enabled at peer group or VRF level, the BFD session for this peer inherits them in that order.

The no form of the **neighbor**{*ip-address*|*ipv6-address*|*peer-group-name*}**bfdpassive** command specifieds that BFD does not operate in passive mode, if passive mode has been configured for the BFD session.

Examples

The following example configures BFD for a BGP neighbor with the IP address 10.11.12.13.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 bfd
```

The following example disables BFD for a BGP neighbor with the IPv6 address 2001:2018:8192::125.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 bfd disable
```

The following example configures BFD for a specified peer group and sets the BFD holdover interval to 12.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor mypeergroup peer-group
device(config-bgp-router)# neighbor mypeergroup bfd
device(config-bgp-router)# neighbor mypeergroup bfd holdover-interval 12
```

The following example configures BFD for a BGP neighbor with the IPv6 address 2001:2018:8192::125 and sets the BFD session timer values.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 2001:2018:8192::125 bfd
device(config-bgp-router)# neighbor 2001:2018:8192::125 bfd min-tx 201 min-rx 301 multiplier 8
```

The following example configures BFD for a BGP neighbor with the IP address 10.11.12.14 and sets the BFD session as passive.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 10.11.12.14 bfd
device(config-bgp-ipv6u)# neighbor 10.11.12.14 bfd passive
```

The following example enables a BFD session for a BGP neighbor with the IP address 10.5.1.1 and configures the BFD session parameters and holdover interval for VRF instance “red”.

```
device# configure terminal
device(config)# router bgp
device(config)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# neighbor 10.5.1.1 bfd
device(config-bgp-ipv4u-vrf)# neighbor 10.5.1.1 bfd min-tx 325 min-rx 330 multiplier 14
device(config-bgp-ipv4u-vrf)# neighbor 10.5.1.1 bfd holdover-interval 6
```

History

Release version	Command history
08.0.90	This command was introduced.

neighbor capability as4

Enables or disables support for 4-byte autonomous system numbers (ASNs) at the neighbor or peer-group level.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **capability as4** [**disable** | **enable**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **capability as4** [**disable** | **enable**]

Command Default

4-byte ASNs are disabled by default.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

disable
: Disables 4-byte numbering.

enable
: Enables 4-byte numbering.

Modes

BGP configuration mode

Usage Guidelines

4-byte ASNs are first considered at the neighbor, then at the peer group, and finally at the global level.

The **disable** keyword or the **no** form of the command removes all neighbor capability for 4-byte ASNs.

Examples

The following example enables 4-byte ASNs globally.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 capability as4 enable
```

neighbor capability orf prefixlist

Advertises outbound route filter (ORF) capabilities to peer routers.

Syntax

neighbor { *ip_address* | *ipv6_address* | *peer-group-name* } **capability orf prefixlist** [**receive** | **send**]

no neighbor { *ip_address* | *ipv6_address* | *peer-group-name* } **capability orf prefixlist** [**receive** | **send**]

Command Default

ORF capabilities are not advertised to a peer device.

Parameters

ip_address
: Specifies the IPv4 address of the neighbor.

ipv6_address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies a peer group.

receive
: Enables the ORF prefix list capability in receive mode.

send
: Enables the ORF prefix list capability in send mode.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

The **no** form of the command disables ORF capabilities.

Examples

The following example advertises the ORF send capability to a neighbor with the IP address 10.11.12.13.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 capability orf prefixlist send
```

The following example advertises the ORF receive capability to a neighbor with the IPv6 address 2001:2018:8192::125.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 capability orf prefixlist receive
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor default-originate

Configures the device to send the default route 0.0.0.0 to a neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **default-originate** [**route-map** *map-name*]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **default-originate** [**route-map** *map-name*]

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name.

route-map
: Optionally injects the default route conditionally, depending on the match conditions in the route map.

map-name
: Specifies a route map.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example sends the default route to a BGP4 neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 default-originate route-map myroutemap
```

The following example sends the default route for a BGP4+ neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 default-originate route-map myroutemap22
```

neighbor description

Specifies a name for a neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **description** *string*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **description**

Parameters

ip-address
IPv4 address of the neighbor.

ipv6-address
IPv6 address of the neighbor.

peer-group-name
Peer group name configured by the **neighbor** *peer-group-name* command.

description *string*
Specifies the name of the neighbor, an alphanumeric string up to 220 characters long.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command removes the name.

Examples

The following example specifies a BGP4 neighbor name.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 description mygoodneighbor
```

The following example specifies a BGP4+ neighbor name for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 default-originate route-map myroutemap
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor ebgp-btsh

Enables BGP time to live (TTL) security hack protection (BTSH) for eBGP.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **ebgp-btsh**

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **ebgp-btsh**

Command Default

Disabled.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies a peer group.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations. To maximize the effectiveness of this feature, the **neighbor ebgp-btsh** command should be executed on each participating device.

The **neighbor ebgp-btsh** command is supported for both directly connected peering sessions and multihop eBGP peering sessions. When the **neighbor ebgp-btsh** command is used, BGP control packets sent by the device to a neighbor have a TTL value of 255. In addition, the device expects the BGP control packets received from the neighbor to have a TTL value of either 254 or 255. For multihop peers, the device expects the TTL for BGP control packets received from the neighbor to be greater than or equal to 255, minus the configured number of hops to the neighbor. If the BGP control packets received from the neighbor do not have the anticipated value, the device drops them.

The **no** form of the command disables BTSH for eBGP.

Examples

The following example enables GTSM between a device and a neighbor with the IP address 10.10.10.1.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.1.1.1 ebgp-btsh
```

The following example enables GTSM between a device and a neighbor with the IPv6 address 2001:2018:8192::125.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 ebgp-btsh
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor ebgp-multihop

Allows eBGP neighbors that are not on directly connected networks and sets an optional maximum hop count.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **ebgp-multihop** [*max-hop-count*]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **ebgp-multihop**

Parameters

ip-address
: IPv4 address of the neighbor

ipv6-address
: IPv6 address of the neighbor

peer-group-name
: Peer group name configured by the **neighbor** *peer-group-name* command.

max-hop-count
: Maximum hop count. Range is from 1 through 255.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Examples

The following example enables eBGP multihop and sets the maximum hop count to 20.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 ebgp-multihop 20
```

The following example enables BGP4+ eBGP multihop for VRF instance "red" and sets the maximum hop count to 40.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 ebgp-multihop 40
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor enforce-first-as

Ensures that a device requires the first ASN listed in the AS_SEQUENCE field of an AS path-update message from eBGP neighbors to be the ASN of the neighbor that sent the update.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **enforce-first-as** [**disable** | **enable**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **enforce-first-as** [**disable** | **enable**]

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

disable
: Disables this feature.

enable
: Enables this feature.

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command disables this requirement globally for the device.

Examples

The following example enables the enforce-first-as feature for a specified neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 enforce-first-as enable
```

neighbor filter-list

Specifies a filter list to be applied to updates from or to the specified neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **filter-list** *ip-prefix-list-name* { **in** | **out** }

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **filter-list** *ip-prefix-list-name* { **in** | **out** }

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies theIPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

ip-prefix-list-name
: Specifies the name of the filter list.

in
: Specifies that the list is applied on updates received from the neighbor.

out
: Specifies that the list is applied on updates sent to the neighbor.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example specifies that filter list “myfilterlist” be applied to updates to a neighbor with the IP address 10.11.12.13.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 filter-list myfilterlist out
```

The following example specifies that filter list “2” be applied to updates from a neighbor with the IPv6 address 2001:2018:8192::125.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 filter-list 2 in
```

neighbor local-as

Causes the device to prepend the local autonomous system number (ASN) automatically to routes received from an eBGP peer.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **local-as** *num* [**no-prepend**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **local-as** *num* [**no-prepend**]

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

num
: Specifies the local ASN. Range is from 1 through 4294967295.

no-prepend
: Causes the device to stop prepending the selected ASN.

Modes

BGP configuration mode

Usage Guidelines

The **no** form of the command removes the local ASN.

Examples

The following example ensures that a device prepends the local ASN.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 local-as 100
```

The following example stops the device from prepending the selected ASN.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 local-as 100 no-prepend
```

neighbor maxas-limit in

Causes the device to discard routes received in UPDATE messages if those routes exceed a maximum AS path length.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **maxas-limit in** { *num* | **disable** }

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **maxas-limit in**

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name.

num
: Specifies the maximum length of the AS path. Valid values range from 0 through 300. The default is 300.

disable
: Prevents a neighbor from inheriting the configuration from the peer group or global configuration and instead uses the default system value.

Modes

BGP configuration mode

Examples

The following example changes the length of the maximum allowed AS path length from the default.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 maxas-limit in 200
```

The following example prevents a neighbor from inheriting the configuration from the peer group or global configuration and instead use the default system value.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 2001:2018:8192::125 maxas-limit in disable
```

neighbor maximum-prefix

Specifies the maximum number of IP network prefixes (routes) that can be learned from a specified neighbor or peer group.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **maximum-prefix** *num* [*threshold*] [**teardown**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **maximum-prefix** *num* [*threshold*] [**teardown**]

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

num
: Specifies the maximum number of IP prefixes that can be learned. Range is from 0 through 4294967295. Default is 0 (unlimited).

threshold
: Specifies the percentage of the value specified by *num* that causes a syslog message to be generated. Range is from 1 through 100. Default is 100.

teardown
: Tears down the neighbor session if the maximum number of IP prefixes is exceeded.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example sets the maximum number of prefixes that will be accepted from the neighbor with the IP address 10.11.12.13 to 100000, and sets the threshold value to 80%.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)#  neighbor 10.11.12.13 maximum-prefix 100000 threshold 80
```

neighbor next-hop-self

Causes the device to list itself as the next hop in updates that are sent to the specified neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **next-hop-self** [**always**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **next-hop-self** [**always**]

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

always
: Enables this feature for route reflector (RR) routes.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command disables this feature.

Examples

The following example causes all updates destined for the neighbor with the IP address 10.11.12.13 to advertise this device as the next hop.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 next-hop-self
```

The following example, for the VRF instance "red," causes all updates destined for the neighbor with the IPv6 address 2001:2018:8192::125 to advertise this device as the next hop.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 10.11.12.13 next-hop-self
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor password

Specifies an MD5 password for securing sessions between the device and a neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **password** *string*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **password**

Command Default

No password is set.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

string
: Password of up to 63 characters in length that can contain any alphanumeric character.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command removes a configured MD5 password.

Examples

The following example specifies a password for securing sessions with a specified neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 password s0M3P@55W0Rd
```

The following BGP4+ example, for VRF instance "red," specifies a password for securing sessions with a specified neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv4u-vrf)# neighbor 2001:2018:8192::125 password s0M3P@55W0Rd
```

History

Release version	Command history
8.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor peer-group

Configures a BGP neighbor to be a member of a peer group.

Syntax

neighbor { *ip-address* | *ipv6-address* } **peer-group** *string*

no neighbor { *ip-address* | *ipv6-address* } **peer-group** *string*

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor.

peer-group *string*
: Specifies the name of a BGP peer group. The name can be up to 63 characters in length and can be composed of any alphanumeric character.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command removes a neighbor from the peer group.

Examples

The following example assigns a specified neighbor to a peer group called “mypeergroup1”.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 peer-group mypeergroup1
```

The following BGP4+ example, for VRF instance "red," assigns a specified neighbor to a peer group called "mypeergroup1".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv4u)# neighbor 2001:2018:8192::125 peer-group mypeergroup1
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor prefix-list

Filters the outgoing and incoming route updates to or from a particular BGP neighbor according to IP address and mask length.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **prefix-list** *string* { **in** | **out** }

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **prefix-list** *string* { **in** | **out** }

Parameters

ip-address
: Specifies the IPv4 address of the neighbor

ipv6-address
: Specifies the IPv6 address of the neighbor

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

string
: Specifies the name of the prefix list.

in
: Applies the filter in incoming routes.

out
: Applies the filter in outgoing routes.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example applies the prefix list "myprefixlist" to incoming advertisements to neighbor 10.11.12.13.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 prefix-list myprefixlist in
```

The following example applies the prefix list "myprefixlist" to outgoing advertisements to neighbor 2001:2018:8192::125.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# neighbor 2001:2018:8192::125 prefix-list myprefixlist out
```

Related Commands

prefix-list

neighbor remote-as

Specifies the autonomous system (AS) in which a remote neighbor resides.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **remote-as** *num*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **remote-as**

Command Default

No AS is specified.

Parameters

ip-address
: IPv4 address of the neighbor

ipv6-address
: IPv6 address of the neighbor

peer-group-name
: Peer group name configured by the **neighbor** *peer-group-name* command.

num
: Remote AS number (ASN). Range is from 1 through 4294967295.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command removes the neighbor from the AS.

Examples

The following example specifies AS 100 for a neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 remote-as 100
```

The following BGP4+ example, for VRF instance "red," specifies AS 100 for a neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 remote-as 100
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor remove-private-as

Configures a device to remove private autonomous system numbers (ASNs) from UPDATE messages that the device sends to a neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **remove-private-as**

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **remove-private-as**

Parameters

ip-address
: IPv4 address of the neighbor

ipv6-address
: IPv6 address of the neighbor

peer-group-name
: Peer group name configured by the **neighbor** *peer-group-name* command.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The device will remove ASNs 64512 through 65535 (the well-known BGP4 private ASNs) from the AS-path attribute in UPDATE messages that the device sends to a neighbor.

The **no** form of the command restores the default so that private ASNs are not removed from UPDATE messages sent to a neighbor by a device.

Examples

The following example removes private ASNs globally.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 remove-private-as
```

The following example removes private ASNs for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 10.11.12.13 remove-private-as
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor route-map

Filters the outgoing and incoming route updates to or from a particular BGP neighbor according to a set of attributes defined in a route map.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **route-map** { **in** *string* | **out** *string* }

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **route-map** { **in** *string* | **out** *string* }

Parameters

ip-address
: Specifies the IPv4 address of the neighbor

ipv6-address
: Specifies the IPv6 address of the neighbor

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

in
: Applies the filter on incoming routes.

string
: Name of the route map.

out
: Applies the filter on outgoing routes.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example applies a route map named "myroutemap" to an outgoing route from 10.11.12.13.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 route-map myroutemap out
```

neighbor route-reflector-client

Configures a neighbor to be a route-reflector client.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **route-reflector-client**

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **route-reflector-client**

Parameters

ip-address
Specifies the IPv4 address of the neighbor

ipv6-address
Specifies the IPv6 address of the neighbor

peer-group-name
Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Use this command on a host device to configure a neighbor to be a route-reflector client. Once configured, the host device from which the configuration is made acts as a route-reflector server.

Examples

The following example configures a neighbor to be a route-reflector client.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 route-reflector-client
```

neighbor send-community

Enables sending the community attribute in updates to the specified BGP neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **send-community** [**both** | **extended** | **standard**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **send-community** [**both** | **extended** | **standard**]

Command Default

The device does not send community attributes.

Parameters

ip-address
: Specifies the IPv4 address of the neighbor

ipv6-address
: Specifies the IPv6 address of the neighbor

peer-group-name
: Specifies the peer group name configured by the **neighbor** *peer-group-name* command.

both
: Sends both standard and extended attributes.

extended
: Sends extended attributes.

standard
: Sends standard attributes.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example sends standard community attributes to a neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 send-community standard
```

neighbor shutdown

Causes a device to shut down the session administratively with its BGP neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **shutdown** [**generate-rib-out**]

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **shutdown** [**generate-rib-out**]

Parameters

ip-address
: IPv4 address of the neighbor

ipv6-address
: IPv6 address of the neighbor

peer-group-name
: Peer group name configured by the **neighbor** *peer-group-name* command.

generate-rib-out
: When a peer is put into the shutdown state, Routing Information Base (RIB) outbound routes are not produced for that peer. Use this option to produce those routes.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Shutting down a session lets you configure the neighbor and save the configuration without the need to establish a session with that neighbor.

Examples

The following example causes a device to shut down the session administratively with its neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 shutdown
```

The following example causes a device to shut down the session administratively with its neighbor and generate RIB outbound routes for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 shutdown generate-rib-out
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor soft-reconfiguration inbound

Stores all the route updates received from a BGP neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **soft-reconfiguration inbound**

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **soft-reconfiguration inbound**

Parameters

ip-address
Specifies the IPv4 address of the neighbor

ipv6-address
Specifies the IPv6 address of the neighbor

peer-group-name
Specifies the peer group name.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Soft reconfiguration stores all the route updates received from a neighbor. If you request a soft reset of inbound routes, the software compares the policies against the stored route updates, instead of requesting the neighbor's BGP4 or BGP4+ route table or resetting the session with the neighbor.

Examples

The following example globally stores route updates from a BGP4 neighbor.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 soft-configuration inbound
```

The following example stores route updates from a BGP4+ neighbor for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 2001:2018:8192::125 soft-configuration inbound
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor timers

Specifies how frequently a device sends KEEPALIVE messages to its BGP neighbors, as well as how long the device waits for KEEPALIVE or UPDATE messages before concluding that a neighbor is dead.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **timers keep-alive** *keepalive_interval* **hold-time** *holdtime_interval*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **timers keep-alive** *keepalive_interval* **hold-time** *holdtime_interval*

Parameters

ip-address
IPv4 address of the neighbor

ipv6-address
IPv6 address of the neighbor

peer-group-name
Peer group name configured by the **neighbor** *peer-group-name* command.

keep-alive *keepalive_interval*
Frequency (in seconds) with which a device sends keepalive messages to a peer. Range is from 0 through 65535 seconds. The default is 60.

hold-time *holdtime_interval*
Interval in seconds that a device waits to receive a keepalive message from a peer before declaring that peer dead. Range is from 0 through 65535 seconds. The default is 180.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

The **no** form of the command restores the defaults.

Examples

The following example sets the keepalive timer for a device to 120 seconds and the hold-timer to 360 seconds.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 timers keep-alive 120 hold-time 360
```

The following example sets the keepalive timer to 120 seconds and the hold-timer to 360 seconds for VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# neighbor 10.11.12.13 timers keep-alive 120 hold-time 360
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

neighbor update-source

Configures the device to communicate with a neighbor through a specified interface.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **update-source** { *ip-address* | *ipv6-address* | **ethernet** *unit/slot/port* | **lag** *lag-id* | **loopback** *num* | **ve** *vlan_id* }

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **update-source** { *ip-address* | *ipv6-address* | **ethernet** *unit/slot/port* | **lag** *lag-id* | **loopback** *num* | **ve** *vlan_id* }

Parameters

ip-address
IPv4 address of the neighbor

ipv6-address
IPv6 address of the neighbor

peer-group-name
Peer group name configured by the **neighbor** *peer-group-name* command.

ip-address
IP address of the update source.

ipv6-address
IPv6 address of the update source.

ethernet *unit/slot/port*
Specifies the physical interface.

lag *lag-id*
Specifies a LAG virtual interface.

loopback *num*
Specifies a loopback interface.

ve *vlan_id*
Specifies a virtual Ethernet VLAN interface.

Modes

BGP configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Use the **no** form of the command to restore the defaults.

Examples

This example configures the device globally to communicate with a neighbor through the specified IPv4 address and port.

```
device#configure terminal
device#(config)# router bgp
device(config-bgp)# neighbor 10.11.12.13 update-source ethernet 5/1/1
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.
08.0.61	The command was modified to include LAG ID options.

neighbor weight

Specifies a weight that the device will add to routes that are received from the specified BGP neighbor.

Syntax

neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **weight** *num*

no neighbor { *ip-address* | *ipv6-address* | *peer-group-name* } **weight** *num*

Parameters

ip-address
: Specifies the IPv4 address of the neighbor.

ipv6-address
: Specifies the IPv6 address of the neighbor

peer-group-name
: Specifies the name of the peer group.

num
: Specifies a value. Valid values range from 1 through 65535. The default is 0.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

BGP prefers larger weights over smaller weights.

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example changes the weight from the default.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# neighbor 10.11.12.13 weight 100
```

netbios-name-server

Specifies the IP address of a NetBIOS WINS server or servers available to Microsoft DHCP clients.

Syntax

netbios-name-server *address* [*address2*,*address3*]

Parameters

address

Specifies the IP address of the NetBIOS WINS server.

Modes

DHCP server pool configuration mode

Examples

The following example specifies the IP address of a NetBIOS WINS server.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# netbios-name-server 192.168.1.55
```

netbios-proto

Configures the NetBIOS protocol-based VLAN and enters NetBIOS protocol VLAN configuration mode.

Syntax

netbios-proto [**name** *string*]

no netbios-proto [**name** *string*]

Command Default

An NetBIOS protocol-based VLAN is not configured.

Parameters

name *string*

Specifies the name of the NetBIOS protocol configuration. The name can be up to 32 characters in length.

Modes

VLAN configuration mode

IP protocol VLAN configuration mode

IPX protocol VLAN configuration mode

IPv6 protocol VLAN configuration mode

DECnet protocol VLAN configuration mode

AppleTalk protocol VLAN configuration mode

Other protocol VLAN configuration mode

Usage Guidelines

The **no** form of the command disables the NetBIOS protocol-based VLANs.

Examples

The following example shows how to configure the NetBIOS protocol-based VLAN.

```
device(config)# ipx-proto name Brown
device(config-vlan-ipx-proto)# netbios-proto name proto1
device(config-vlan-netbios-proto)# no dynamic
```

network

Configures the device to advertise a network.

Syntax

network *network/mask* [**backdoor** | **route-map** *map-name* | **weight** *num*]

no network *network/mask* [**backdoor** | **route-map** *map-name* | **weight** *num*]

Command Default

No network is advertised.

Parameters

network/mask
: Network and mask in CIDR notation.

backdoor
: Changes administrative distance of the route to this network from the EBGP administrative distance (the default is 20) to the local BGP4 weight (the default is 200), tagging the route as a backdoor route.

route-map *map-name*
: Specifies a route map with which to set or change BGP4 attributes for the network to be advertised.

weight*num*
: Specifies a weight to be added to routes to this network. Range is 0 through 65535. The default is 0.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example imports the IPv4 network 10.11.12.12/30 into the route map "myroutemap".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# network 10.11.12.13/30 route-map myroutemap
```

The following example imports the IPv6 prefix 2001:db8::/32 into the BGP4+ database and sets a weight of 300.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# network 2001:db8::/32 weight 300
```

History

Release version	Command history
8.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

network (DHCP)

Configures the subnet network and mask of the DHCP address pool.

Syntax

network*subnet/mask*

Parameters

subnet/mask

Specifies the subnet network and mask of the address pool.

Modes

DHCP server pool configuration mode

Usage Guidelines

A subnet network can only be configured under one DHCP address pool. You cannot configure the same subnet network under another DHCP address pool. You must use this command before configuring other options under the DHCP server pool.

If the network configuration is removed using the **no network** command, all the other configured options under the pool are deleted.

Examples

The following command specifies the subnet network and mask of the DHCP address pool.

```
device# configure terminal
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# network 10.2.3.44/24
```

The following command removes the network configuration and all other configured options under the pool.

```
device# configure terminal
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# no network 10.12.13.44/24
Removal of network configuration will delete all other options configured under the pool. Do you want
to remove(y or n)?:
```

next-bootstrap-server

Specifies the IP address of the next server the client should use for bootup.

Syntax

next-bootstrap-server *ip-address*

Parameters

ip-address

Specifies the IP address of the next bootstrap server.

Modes

DHCP server pool configuration mode

Examples

The following example specifies the next bootstrap server.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# next-bootstrap-server 10.2.5.44
```

next-hop-enable-default

Configures the device to use the default route as the next hop.

Syntax

next-hop-enable-default

no next-hop-enable-default

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Examples

The following example configures the device to use the default route as the next hop for the IPv4 unicast address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# next-hop-enable-default
```

The following example configures the device to use the default route as the next hop for the IPv6 unicast address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# next-hop-enable-default
```

next-hop-recursion

Enables BGP recursive next-hop lookups.

Syntax

next-hop-recursion

no next-hop-recursion

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

If the BGP next hop is not the immediate next hop, a recursive route lookup in the IP routing information base (RIB) is needed. With recursion, a second routing lookup is required to resolve the exit path for destination traffic. Use this command to enable recursive next-hop lookups.

Examples

The following example enables recursive next-hop lookups for BGP4 for the IPv4 unicast address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# next-hop-recursion
```

The following example enables recursive next-hop lookups for the IPv6 unicast address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# next-hop-recursion
```

no-dynamic-aging

Disables aging of ports that are dynamically assigned to the protocol or subnet-based VLANs.

Syntax

no-dynamic-aging

no no-dynamic-aging

Command Default

The dynamic protocol VLAN ages out after 10 or 20 minutes, if no packets are received.

Modes

IP protocol VLAN configuration mode

IPX protocol VLAN configuration mode

AppleTalk protocol VLAN configuration mode

DECnet protocol VLAN configuration mode

NetBIOS protocol VLAN configuration mode

Other protocol VLAN configuration mode

IPV-6 protocol VLAN configuration mode

Usage Guidelines

NOTE
Configure the command only if your configuration includes dynamically assigned VLAN memberships for protocol or subnet VLANs.

The **no** form of the command enables aging of the dynamic protocol VLAN.

Examples

The following example shows how to configure dynamic aging.

```
device(config)# vlan 10 by port
device(config-vlan-10)# interface ethernet 1/1/1 to 1/1/5
device(config-vlan-10)# ip-proto name IP_Prot_VLAN
device(config-vlan-ip-proto)# no-dynamic-aging
```

no lldp run

Disables Link Layer Discovery Protocol (LLDP) globally.

Syntax

no lldp run

Command Default

LLDP is enabled by default.

Modes

Global configuration mode

Usage Guidelines

LLDP is enabled by default. Use this command to disable LLDP.

Examples

The following example disables LLDP globally.

```
device(config)# no lldp run
```

History

Release version	Command history
08.0.90	The **lldp run** command is deprecated because the LLDP is enabled by default.
08.0.40a	Global default behavior changes to disabled for data ports. SPX (802.1br) ports are enabled separately with the **spx cb-enable** command.

non-preempt-mode

Enables the non-preempt mode on all backups.

Syntax

non-preempt-mode

no non-preempt-mode

Command Default

By default, the non-preempt mode is disabled; preemption is enabled.

Modes

VRID configuration mode

Usage Guidelines

By default, a backup that has a higher priority than another backup that has become the master can preempt the master, and take over the role of master. If you want to prevent this behavior, disable preemption.

Preemption applies only to backups and takes effect only when the master has failed and a backup has assumed ownership of the VRID. The **non-preempt-mode** command prevents a backup with a higher priority from taking over as master from another backup that has a lower priority but has already become the master of the VRID.

Preemption is especially useful for preventing flapping in situations where there are multiple backups and a backup with a lower priority than another backup has assumed ownership, because the backup with the higher priority was unavailable when ownership changed.

If you enable the non-preempt mode (thus disabling the preemption feature) on all the backups, the backup that becomes the master following the disappearance of the master continues to be the master. The new master is not preempted.

The **no** form of the command disables the non-preempt mode.

Examples

The following example enables the non-preemption mode.

```
device(config)# vlan 200
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# non-preempt-mode
```

non-preempt-mode (VRRP)

Disables preempt mode for a Virtual Router Redundancy Protocol (VRRP) or VRRP Extended (VRRP-E) backup device.

Syntax

non-preempt-mode

no non-preempt-mode

Command Default

Preemption is enabled by default.

Modes

VRID interface configuration mode

Usage Guidelines

This command is supported in VRRP and VRRP-E. When the **non-preempt-mode** command is entered, a backup device with a higher VRRP priority is prevented from taking control of the virtual router ID (VRID) from another backup device that has a lower priority, but has already assumed control of the VRID. Disabling preemption is useful to prevent flapping when there are multiple backup devices and a backup with a lower priority assumes the role of master. When other backup devices with a higher priority are back online, the role of master can flap between devices.

In VRRP, the owner device always assumes the role of master when it comes back online, regardless of the preempt mode setting.

The **no** form of the command re-enables preemption.

Examples

The following example disables preempt mode for the virtual-router ID 1 session:

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.5.3/24
device(config-if-e1000-1/1/5)# ip vrrp vrid 1
device(config-if-e1000-1/1/5-vrid-1)# non-preempt-mode
```

nonstop-routing (OSPF)

Enables nonstop routing (NSR) for OSPF.

Syntax

nonstop-routing

no nonstop-routing

Command Default

Enabled.

Modes

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

The **no** form of the command disables non-stop routing.

Examples

The following example re-enables NSR on a device.

```
device# configuration terminal
device(config)# router ospf
device(config-ospf-router)# nonstop-routing
```

ntp

Enables the Network Time Protocol (NTP) client and server mode.

Syntax

ntp

no ntp

Command Default

NTP services are disabled on all interfaces by default.

Modes

Global configuration mode

Usage Guidelines

Before you begin to configure NTP, you must use the **clock set** command to set the time on your device to within 1000 seconds of the Coordinated Universal Time (UTC).

The **no ntp** command disables NTP and removes the NTP configuration, including all static configuration as well as learned associations from NTP neighbors.

Examples

The following example enables the NTP client and server mode.

```
device(config)# ntp
device(config-ntp)#
```

ntp-interface

Enters Network Time Protocol (NTP) interface configuration mode.

Syntax

ntp-interface { **management** *port* | **ethernet** *unit/slot/port* | **lag** *lag-id* | **ve** *ve-id* }

no ntp-interface { **management** *port* | **ethernet** *unit/slot/port* | **lag** *lag-id* | **ve** *ve-id* }

Parameters

management *port*
Specifies the management interface.

ethernet *unit/slot/port*
Specifies the Ethernet interface.

lag *lag-id*
Specifies the LAG virtual interface.

ve *ve-id*
Specifies the Virtual Ethernet interface.

Modes

NTP configuration mode

Usage Guidelines

The broadcast server or client is configured on selected interfaces. To remove the NTP broadcast configurations on the specified interface, use the **no** form of this command.

The **no** form of the command returns to NTP configuration mode.

The **ntp-interface** command is a mode-change command.

Examples

The following example enters the NTP interface configuration mode for Ethernet interface 1/1/1.

```
device(config)# ntp
device(config-ntp)# ntp-interface ethernet 1/1/1
device(config-ntp-if-e1000-1/1/1)#
```

The following example enters the NTP interface configuration mode for management interface 1.

```
device(config)# ntp
device(config-ntp)# ntp-interface management 1
device(config-ntp-mgmt-1)# exit
```

History

Release version	Command history
08.0.61	This command was modified to include the LAG ID option.

ntp reset

Restarts the Network Time Protocol (NTP) functionality when there is synchronization error and the device could not recover by itself.

Syntax

ntp reset

Command Default

NTP services are disabled on all interfaces by default.

Modes

Privileged EXEC mode

Usage Guidelines

The NTP reset operation neither erases the NTP/clock configurations nor impacts the clock values.

Examples

The following example restarts the NTP functionality.

```
device# ntp reset
```

Commands O, P, Q, R, and Sa through Sh

ocsp (PKI)

Sets the HTTP method for the Online Certificate Status Protocol (OCSP) request.

Syntax

ocsp { **http post** }

no ocsp { **http post** }

Command Default

By default, an HTTP "get" command is used for OCSP requests.

Parameters

http post

Sets the method for OCSP requests.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the configuration.

By default, an HTTP "get" command is used to reach the OCSP responder. The HTTP "get" method can be changed to an HTTP post using the command **ocsp http post**. The command is typically configured for the Linux operating system.

Examples

The following example configures trustpoint abcd to use the HTTP post method for OCSP requests.

```
device# configure terminal
device(config)# pki trustpoint abcd
device(config-pki-trustpoint-abcd)# ocsp http post
device(config-pki-trustpoint-abcd)# revocation-check ocsp
device(config-pki-trustpoint-abcd)# ocsp-url http://15.1.1.1:2560
device(config-pki-trustpoint-abcd)# fingerprint 3C:EA:EC:E6:F1:DD:3B:86:65:DE:58:F4:A2:75:D8:63:6D:
23:68:40
device(config-pki-trustpoint-abcd)# exit
device(config)#
```

History

Release version	Command history
08.0.70	This command was introduced.

ocsp-url (PKI)

Defines the URL to be used for Online Certificate Status Protocol (OCSP) requests.

Syntax

ocsp-url { *url* }

no oscp-url { *url* }

Command Default

Parameters

url

Configures the URL for OCSP requests.

Modes

PKI trustpoint configuration sub-mode.

Usage Guidelines

The no form of the command removes the configuration.

Examples

The following example sets the url for OCSP requests to http://15.1.1.1:2560.

```
device# configure terminal
device(config)# pki trustpoint abcd
device(config-pki-trustpoint-abcd)# ocsp http post
device(config-pki-trustpoint-abcd)# revocation-check ocsp
device(config-pki-trustpoint-abcd)# ocsp-url http://15.1.1.1:2560
device(config-pki-trustpoint-abcd)# fingerprint 3C:EA:EC:E6:F1:DD:3B:86:65:DE:58:F4:A2:75:D8:63:6D:
23:68:40
device(config-pki-trustpoint-abcd)# exit
device(config)#
```

History

Release version	Command history
08.0.70	This command was introduced.

opaque-capability (OSPFv2)

Enables the opaque link-state advertisement (LSA) capability.

Syntax

opaque-capability { **disable** | **enable** }

Command Default

The opaque LSA capability is enabled by default.

Parameters

disable

Disables the opaque LSA capability.

enable

Re-enables the opaque LSA capability if it has been disabled.

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

When the opaque LSA capability is disabled, the device does not accept opaque LSAs from a peer. Therefore, these LSAs are not added to the OSPF link state database and are not flooded to the opaque capable peers.

Examples

The following example disables the opaque LSA capability.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# opaque-capability disable
```

The following example re-enables the opaque LSA capability if it has been disabled.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# opaque-capability enable
```

History

Release version	Command history
08.0.90	This command was introduced.

openflow controller

Connects devices to openflow controller connections.

Syntax

openflow controller *ip-address*

openflow controller passive no-ssl

no openflow controller *ip-address*

no openflow controller passive no-ssl

Command Default

The openflow controller is not enabled.

Parameters

ip-address

Specifies the IPv4 address.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the **openflow controller** *ip-address* and **openflow controller passive no-ssl**.

Examples

The following example connects to an openflow controller in active mode.

```
device# configure terminal
device(config)# openflow controller ip-address 10.2.3.4
device(config)# openflow controller ip-address 10.2.3.4 no-ssl port 6635
```

The following example connects to an openflow controller in passive mode.

```
device# configure terminal
device(config)# openflow controller passive no-ssl
device(config)# openflow controller passive no-ssl ip-address 10.2.3.6
```

NOTE

Passive mode connections are intended for testing environments and not recommended for production environments.

History

Release	Command History
08.0.30	This command was introduced.

openflow default send-to-controller

Configures a device-level option to forward the packets to the controller.

Syntax

openflow default send-to-controller

no openflow default send-to-controller

Command Default

The **no openflow default send-to-controller** is not enabled.

Modes

Global configuration mode

Examples

The following example configures a device-level option to forward the packets to the controller.

```
device# configure terminal
device(config)# openflow default send-to-controller
```

History

Release	Command History
08.0.30	This command was introduced.

openflow enable

Enables or disables the OpenFlow hybrid port-mode on the port.

Syntax

openflow enable [**layer2** | **layer3** | **layer23** [**hybrid-mode**]]

no openflow enable [**layer2** | **layer3** | **layer23** [**hybrid-mode**]]

Parameters

layer2

Enables Layer 2 matching mode for flows.

layer3

Enables Layer 3 matching mode for flows.

layer23 hybrid-mode

Enables Layer 2 and Layer 3 matching mode for flows with an option for hybrid port-mode.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

In interface configuration mode, this command enables Layer 2 or Layer 3 matching mode for flows with an optional enabling of hybrid port-mode.

NOTE

OpenFlow must be globally enabled before the Layer 2 or Layer 3 matching modes can be specified.

Examples

After OpenFlow 1.0 is enabled, the following example configures Layer 2 and Layer 3 matching mode for flows.

```
device# configure terminal
device(config)# openflow enable ofv100
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# openflow enable layer23 hybrid-mode
```

After OpenFlow 1.3 is enabled, the following example configures Layer 2 and Layer 3 matching mode for flows.

```
device# configure terminal
device(config)# openflow enable ofv130
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# openflow enable layer23
```

History

Release	Command History
08.0.20	This command was introduced.

openflow hello-reply disable

Enables the second hello message sent from the switch to the controller.

Syntax

openflow hello-reply disable

no openflow hello-reply disable

Command Default

The second hello message is enabled.

Modes

Global configuration mode

Usage Guidelines

There are two hello messages sent from the switch to the controller during the connection establishment. Use the no openflow hello-reply disable command to disable the second hello message for unexpected interruption to the connection to the controller.

Examples

The following example disables the second hello message from the switch to the controller.

```
device# configure terminal
device(config)# no openflow hello-reply disable
```

History

Release	Command History
08.0.30	This command was introduced.

openflow log timeout

Enables or disables the syslog message that is generated when a flow is deleted as a result of idling or hard timeout.

Syntax

openflow log timeout

no openflow log timeout

Command Default

The openflow log timeout is enabled.

Modes

Global configuration mode

Examples

The following example enables the openflow log timeout syslog message.

```
device# configure terminal
device(config)# openflow log timeout
```

The following example disables the openflow log timeout syslog message.

```
device# configure terminal
device(config)# no openflow log timeout
```

History

Release	Command History
08.0.30	This command was introduced.

openflow protected-vlans

Enables or disables the protected VLANs on an OpenFlow hybrid port mode interface.

Syntax

openflow protected-vlans *vlan-id*

no protected-vlans *vlan-id*

Parameters

vlan-id

Specifies a VLAN.

Modes

Global configuration mode

Interface configuration mode

Examples

After OpenFlow 1.0 is enabled, the followig example add a protected VLANs on an OpenFlow hybrid port mode interface.

```
device# configure terminal
device(config)# openflow enable ofv100
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# openflow enable layer23 hybrid-mode
device(config-if-1/1/1)# openflow protected-vlans 400
```

After OpenFlow 1.3 is enabled, the followig example add a protected VLANs on an OpenFlow hybrid port mode interface.

```
device# configure terminal
device(config)# openflow enable ofv130
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# openflow enable layer23 hybrid-mode
device(config-if-1/1/1)# openflow protected-vlans 400
```

History

Release	Command History
08.0.30	This command was introduced.

openflow purge-time

Configures the maximum amount of time (in seconds) before stale flows are purged from the OpenFlow flow table after a switchover, failover, or OS upgrade.

Syntax

openflow purge-time seconds

no openflow purge-time seconds

Command Default

The value of the OpenFlow purge timer is the default value for normal circumstances.

Parameters

seconds

Specifies the maximum amount of time (in seconds), before stale flows are purged. The range is from 1 through 600. The default is 240 seconds.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

You can configure a larger value for the OpenFlow purge timer, if delay is anticipated in learning the flows from controller after switch-over.

Examples

The following example sets the OpenFlow purge time to 500 seconds:

```
device(config)# openflow purge-time 500
```

History

Release version	Command history
08.0.30	This command was introduced.

optical-monitor

Configures the device to monitor optical transceivers in the system.

Syntax

optical-monitor[*alarm-interval*]

no optical-monitor[*alarm-interval*]

optical-monitor down-port-enable

no optical-monitor down-port-enable

optical-monitor non-ruckus-optic-enable

no optical-monitor non-ruckus-optic-enable

Command Default

Optical transceivers are not monitored.

Parameters

alarm-interval

Specifies the interval at which alarms and warning messages are sent. The default and minimum timer for ICX 7550, ICX 7650, and ICX 7850 devices is 8 minutes.

Modes

Global configuration mode

Interface subtype configuration mode

Usage Guidelines

When digital optical monitoring (DOM) is enabled, the system monitors the temperature and signal power levels for the optical transceivers. Console messages and syslog messages are sent when optical operating conditions fall below or rise above the QSFP28, QSFP+, SFP28, SFP, or SFP+ manufacturer-recommended thresholds.

The **no optical-monitor** and **optical-monitor 0** commands perform the same function; that is, they both disable DOM.

By default, the optical monitor ports are up. If you enable down-port-enable option, it allow the optical monitoring of the ports that are down.

Default is to monitor the Ruckus brand optics. The non-ruckus-optic-enable option allow to monitor the non-Ruckus optics.

Examples

The following example enables optical monitoring on all RUCKUS-qualified optics installed in the device.

```
device# configure terminal
device(config)# optical-monitor
```

The following example enables optical monitoring on a specific port.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# optical-monitor
```

The following example sets the alarm interval to 10 minutes.

```
device# configure terminal
device(config)# interface ethernet 1/1/1 to 1/1/4
device(config-mif-e10000-1/1/1-1/1/4)# optical-monitor 10
```

option

Specifies Dynamic Host Configuration Protocol (DHCP) options to be exchanged between the server and the client.

Syntax

option *option-name* { **ascii** | **hex** | **ip** } *option-value*

option *option-number* { **ascii** | **hex** | **ip** } **ascii** | **bool** | **hex** | **integer** | **ip** } *option-value*

Parameters

option-name

Specifies the option name. Valid values are:

all-subnets-local

Specifies that all connected subnets use the same MTU. (Option 27.)

arp-cache-timeout

Specifies the timeout in seconds for ARP cache entries. (Option 35.)

associated-ip

Specifies that all IP addresses associated with a given DHCP client are listed. (Option 92.)

bcms-controller-address

Specifies a list of IP addresses for Broadcast and Multicast Service (BCMCS) controllers. Controllers are listed in order of preference. (Option 89.)

bcms-controller-names

Specifies a list of Broadcast and Multicast Service (BCMCS) Controller domain names. (Option 88.)

boot-size

Specifies the length of the default boot image for the client in 512-octet blocks . (Option 13.)

bootfile-name

Specifies a boot image to be used by the client. (Option 67.)

broadcast-address

Specifies the Broadcast Address in use on the client subnet. (Option 28.)

client-last-transaction-time

Specifies the last client transactin time in units. (Option 91.)

cookie-servers

Specifies the list of RFC 865 cookie servers available to the client. Servers are listed in order of preference. (Option 8.)

default-ip-ttl

Specifies the default time-to-live that the client should use on outgoing datagrams. (Option 23.)

default-tcp-ttl

Specifies the default TTL that the client should use when sending TCP segments. (Option 37.)

default-url

Specifies the default URL used. (Option 114.)

dhcp-client-identifier

Specifies the DHCP client identifier. (Option 61.)

dhcp-lease-time
Specifies the DHCP lease time. (Option 51.)

dhcp-max-message-size
DHCP maximum message size. Used as default, if not provided by the client. (Option 57.)

dhcp-message
This option is used by a DHCP server to provide an error message to a DHCP client in a DHCPNAK message in the event of a failure. (Option 56.)

dhcp-message-type
Specifies the type of DHCP message contained in the DHCP packet. (Option 53.)

dhcp-option-overload
Indicates the DHCP 'sname' or 'file' fields are overloaded by using them to carry DHCP options. (Option 52.)

dhcp-parameter-request-list *list-of-intergers*
Specifies the options to be sent to the client. (Option 55.)

dhcp-rebinding-time
Specifies the rebinding time in the DHCP client. (Option 59.)

dhcp-renewal-time
Specifies the renewal time in the DHCP client. (Option 58.)

dhcp-requested-address
Specifies an IP address used in a client request (DHCPDISCOVER) to allow the client to request a particular IP address be assigned. (Option 50.)

dhcp-server-identifier
Specifies the IP address of the server. (Option 54.)

domain-name
Specifies the domain name the client should use when resolving host names using the Domain Name System. (Option 15.)

domain-name-servers
Specifies a list of Domain Name System (RFC 1035) name servers available to the client. Servers are listed in order of preference. (Option 6.)

domain-search
Specifies a Domain Names search list used by the client to locate not-fully-qualified domain names. (Option 119.)

extensions-path
Specifies a file, retrievable through TFTP, that contains information that can be interpreted in the same way as the vendor-extension field within the BOOTP response. (Option 18.)

finger-server
Specifies a list of Finger Servers available to the client. Servers are listed in order of preference. (Option 73.)

font-servers
Specifies a list of IP addresses of X Window System Font servers available to the client. X Window System Font servers are listed in order of preference. (Option 48.)

host-name
Configures the host name that can be assigned to the DHCP clients. (Option 12.)

ieee802-3-encapsulation
Specifies if the client should use Ethernet Version 2 (RFC 894) or IEEE 802. (Option 36.)

ien116-name-servers
Specifies a list of Name Servers available to the client. Name Servers are listed in order of preference. (Option 5.)

impress-servers
Specifies a list of Imagen Impress Servers available to the client. Servers are listed in order of preference. (Option 10.)

interface-mtu
Specifies the MTU to use for the interface. (Option 26.)

ip-forwarding
Specifies if the client should configure its IP layer for packet forwarding. (Option 19.)

irc-server
Specifies a list of Internet Relay Chat (IRC) Servers available to the client. Servers are listed in order of priority. (Option 74.)

log-servers
Specifies a list of UDP log servers available to the client. Servers are listed in order of preference. (Option 7.)

lpr-servers
Specifies a list of Line Printer Servers available to the client. Servers are listed in order of preference. (Option 9.)

mask-supplier
Specifies if the client responds to subnet mask requests using ICMP. (Option 30.)

max-dgram-reassembly
Specifies the maximum size datagram that the client can reassemble. (Option 22.)

merit-dump
Specifies the path name of the core file of the client when the client crashes. (Option 14.)

mobile-ip-home-agent
Specifies a list of IP addresses for Mobile IP Home Agents available to the client. Agents are listed in order of priority. (Option 68.)

nds-context
Specifies the name of the initial Netware Directory Service for an NDS client. (Option 87.)

nds-servers
Specifies the IP addresses for Novell Directory Services (NDS) servers available to the client. Servers are listed in order of priority. (Option 85.)

nds-tree-name *string*
Specifies the name of the Novell Directory Services (NDS) Tree to which the client will connect. (Option 86.)

netbios-dd-server
Specifies a list of NetBIOS Datagram Distribution Servers (NBDD) servers (RFC 1001 and RFC 1002). NBDD servers are listed in order of preference. (Option 45.)

netbios-name-servers
Specifies a list of NetBIOS Name Servers (NBNS) (RFC 1001 and RFC 1002). NBNS servers are listed in order of preference. (Option 44.)

netbios-node-type
Specifies the NetBIOS node type option. (Option 46.)

netbios-scope
Specifies the NetBIOS over TCP/IP scope parameter (RFC 1001 and RFC 1002) for the client. (Option 47.)

netinfo-server-address *ip-address*
Specifies the list of IP addresses used.This option is supported if the option value type is IP, ASCII, or HEX. (Option 112.)

netinfo-server-tag *string*
Specifies the netinfo server tag test used. (Option 113.)

nis-domain
Specifies the NIS domain (entered as an ASCII character string) for the client. (Option 40.)

nis-servers
Specifies a list of IP addresses for NIS servers available to the client. Servers are listed in order of preference. (Option 41.)

nisplus-domain
Specifies the NIS+ domain (entered as an ASCII character string) for the client. (Option 64.)

nisplus-servers
Specifies a list of IP addresses for NIS+ servers available to the client. Servers are listed in order of preference. (Option 65.)

nntp-server
Specifies a list of Network News Transport Protocol (NNTP) Servers available to the client. Servers are listed in order of priority. (Option 71.)

non-local-source-routing
Specifies a flag to enable or disable non-local source route forwarding in the client. (Option 20.)

ntp-servers
Specifies a list of IP addresses for NTP servers available to the client. Servers are listed in order of preference. (Option 42.)

nwip-domain
Specifies the NetWare/IP Domain Name used by the NetWare/IP product. (Option 62.)

nwip-suboptions
Specifies a sequence of suboptions for NetWare/IP clients (RFC2242). (Option 63.)

path-mtu-aging-timeout
Specifies the timeout (in seconds) to use when aging Path MTU values discovered. (Option 24.)

path-mtu-plateau-table
Specifies a table of MTU sizes to use when performing Path MTU Discovery. (Option 25.)

perform-mask-discovery
Specifies a table of MTU sizes to use when performing Path MTU Discovery. (Option 29.)

policy-filter *ip-address network mask*
Specifies Policy Filters for non-local source routing. The filters consist of a list of IP addresses and masks that specify destination/mask pairs with which to filter incoming source routes. Any source-routed datagram whose next-hop address does not match one of the filters should be discarded by the client. IP address pairs are accepted.(Option 21.)

pop-server
Specifies a list of Post Office Protocol (POP3) Servers available to the client. Servers are listed in order of priority. (Option 70.)

pxe-client-id
Allows a client to specify its PXE client identity. (Option 97.)

pxe-interface-id

Allows a client to specify its network interface type, major and minor revision. (Option 94.)

pxe-system-type

A list of one ore more 16-bit integers that allows a client to specify its pre-boot architecture type(s). (Option 93.)

resource-location-servers

Specifies a list of Resource Location Servers available to the client. Servers are listed in order of preference. (Option 11.)

root-path

Specifies the path name (entered as an ASCII character string) that contains the client root disk. (Option 17.)

router-discovery

Specifies if the client should perform Router Discovery. (Option 31.)

router-solicitation-address

Specifies the address to which the client should transmit router solicitation requests. (Option 32.)

routers

Specifies an IP addresses of the default router on the client subnet. Only one router can be specified. (Option 3.)

slp-directory-agent

Specifies the IP addresses of SLP Directory Agents, and flags to set the use of these addresses. (Option 78.)

slp-service-scope

Specifies a list of service scopes for SLP, and whether the use of this list is mandatory. (Option 79.)

smtp-server

Specifies a list of Simple Mail Transport Protocol (SMTP) Servers available to the client. Servers are listed in order of priority. (Option 69.)

static-routes *destination ip-address static-route*

Specifies a list of Static Routes that the client should install in its routing cache. If multiple routes to the same destination are specified, they are listed in descending order of priority. The routes consist of a list of IP address pairs. The first address is the destination address, and the second address is the router for the destination. Note that the default route (0.0.0.0) is an illegal destination for a static route. (Option 33.)

streettalk-server *ip-address*

Specifies a list of StreetTalk Servers available to the client. Servers are listed in order of priority. (Option 75.)

streettalk-directory-assistance-server *ip-address*

Specifies a list of StreetTalk Directory Assistance (STDA) Servers available to the client. Servers are listed in order of priority. (Option 76.)

subnet-mask

Specifies the client subnet mask (per RFC 950). This is not configurable using the option command. This option is configured using the network (dhcp) command. (Option 1.)

subnet-selection

Specifies the client preferred subnet for address assignment. (Option 118.)

swap-server

Specifies the IP address of the client Swap Server. (Option 16.)

tcp-keepalive-garbage

Specifies a flag to enable or disable TCP keepalive garbage in the client. (Option 39.)

tcp-keepalive-interval
Specifies the TCP keepalive interval timeout value used by the client. (Option 38.)

tftp-server-address
Specifies the address of the TFTP Server available to the client. (Option 150.)

tftp-server-name
Specifies the address or name of the TFTP server available to the client. (Option 66.)

time-offset
Specifies the offset of the subnet of the client in seconds from UTC. (Option 2.)

time-servers
Specifies a list of Time Servers available to the client. Time Servers are listed in order of preference. (Option 4.)

trailer-encapsulation
Specifies if the client uses trailers when using the ARP protocol. (Option 34.)

uap-servers
Specifies a list of URLs, each pointing to a user authentication service that is capable of processing authentication requests encapsulated in the User Authentication Protocol (UAP). (Option 98.)

user-class
Specifies identifying information to the DHCP client. (Option 77.)

vendor-class-identifier *string*
Specifies the Vendor Class Identifier. This is used in conjunction with option 43 (Vendor Specific information), allowing clients and servers to exchange vendor-specific information. (Option 60.)

vendor-encapsulated-options { **ascii** *string* | **hex** *value* | **ip** *ip-address* }
Specifies vendor-specific information. This allows clients and servers to exchange vendor-specific information. (Option 43.)

vivso *string*
Specifies Vendor-Identified vendor specific information. Only the string value is accepted. (Option 125.)

www-server
Specifies a list of World Wide Web (WWW) Servers available to the client. Servers are listed in order of priority. (Option 72.)

x-display-manager
Specifies a list of IP addresses of X Window System Display Managers available to the client. X Window System Display Managers are listed in order of preference. (Option 49.)

option-number
General options supported in DHCP server (valid values range from 1 through 254).

ascii
Specifies the *option-value* is an ASCII string (up to 128 characters).

bool
Specifies the boolean. Valid values are 0 for false and 1 for true.

hex
Specifies an integer or list of integers, separated by a space for applicable options.

integer
Specifies an interger.

ip

Specifies the *option-value* is an IP address. You can configure up to a maximum of three IP addresses separated by a space.

option-value

The value of the option; for example, an IP address or vendor-specific information. If an option is already configured and the user enters an option with a different value, the option is overwritten with the configured new values.

Modes

DHCP server pool configuration mode

Usage Guidelines

This command is used to specify DHCP options that the DHCP server passes to clients. For example, you can configure option 3, so the DHCP server passes the IP address of the default routers to the client.

Another example is option 43, allowing the DHCP server to pass vendor-specific information, in the form of a hex value, and IP address, or an ASCII string, to the clients that receive the DHCP ACK. With this example, configuring DHCP option 60 helps in identifying the incoming DHCP client. If the vendor class identifier (VCI) advertised by the DHCP client matches with the DHCP server, the server makes a decision to exchange the vendor-specific information configured as part of DHCP option 43.

The following option numbers must be configured using the option number: 80 through 84, 90, 95, 96, 99 through 111, 115 through 117, 126 through 149, 151 through 255. The options 1 through 254 are allowed to be configured using the option number. Options that have option names support are automatically configured as **option option-name** *option-value*.

The following options accept the option value: 1 through 79, 85 through 89, 91 through 94, 97, 98, 112 through 114, 118, 119, 125, and 150.

Only one default router can be specified. Do not enter multiple router addresses.

Examples

The following example configures the boolean option **ip-forwarding** which specifies that the client should configure the IP layer for packet forwarding.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option ip-forwarding 1
```

The following example configures option **arp-cache-timeout** which specifies the timeout in seconds for ARP cache entries. This option accepts integer values.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option arp-cache-timeout 50
```

The following example configures a list of integers that specifies the MTU sizes to be used by clients when performing path MTU discovery.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option path-mtu-plateau-table 512 1024
```

The following example specifies the service scope and flags to use the scope is mandatory or not.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option slp-service-scope 0 slp1
```

The following example specifies the list of SLP agents and flags to use the agents to the clients.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option slp-directory-agent 1 2.2.2.2 3.3.3.3
```

The following example specifies the static routes to be used by the clients.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option static-routes 10.10.10.100 10.10.10.1
```

The following example specifies the policy filter to be used by the clients

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option policy-filter 10.10.10.50 255.255.255.0
```

The following example specifies the **pxe-client-id** type and client identity string.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option pxe-client-id 1 pxe1
```

The following example configures **option pxe-interface-id**, which specifies the client's network interface type, major version, and minor version.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option pxe-interface-id 1 1 1
```

The following example configures **vendor-encapsulated-options** to be transmitted as the specified hexadecimal value.

```
device# configure terminal
device(config)# ip dhcp-server pool 1
device(config-dhcp-1)# option vendor-encapsulated-options hex
061731302e31302e31302e31302c31322e31322e31322e3132
```

History

Release version	Command history
08.0.30mb	This command was introduced.
08.0.70	This command was expanded to support DHCP generic server options.
08.0.80	This command was modified to specify both the image type and flash location for option 67.
09.0.00	This command was modified to support Internet Systems Consortium (ISC) DHCP. This command was also modified so that option 43 can be configured for RUCKUS AP IP addresses configuration in ASCII format.
09.0.10a	The **option vendor-encapsulated-options** command was modified to require an additional sub-parameter of **ascii**, **hex**, or **ip**, followed by an appropriate value. (Previously, only a string was required.)

originator-id

Configures MSDP to use the specified interface IP address as the IP address of the rendezvous point (RP) in a source-active (SA) message.

Syntax

originator-id *type number*

no originator-id *type number*

Command Default

MSDP uses the IP address of the originating RP in the RP address field of the SA message.

Parameters

type

Specifies the type of interface used by the RP. You can use Ethernet, loopback, and virtual routing interfaces (ve).

number

Specifies the interface number. For example, the Ethernet port number, loopback number, or virtual routing interface number.

Modes

MSDP router configuration mode

MSDP router VRF configuration mode

Usage Guidelines

The **no** form of this command restores the default

Examples

This example configures an interface IP address to be the IP address of the RP.

```
Device(config)# interface loopback 2
Device(config-lbif-2)# ip address 2.2.1.99/32
Device(config)# router msdp
Device(config-msdp-router)# originator-id loopback 2
Device(config-msdp-router)# exit
```

This example configures an interface IP address to be the IP address of the RP on a VRF named blue.

```
Device(config)# interface loopback 2
Device(config-lbif-2)# ip address 2.2.1.99/32
Device(config)# router msdp vrf blue
Device(config-msdp-router-vrf blue)# originator-id loopback 2
Device(config-msdp-router-vrf blue)# exit
```

other-proto

Configures the other protocol VLAN and enters the other protocol VLAN configuration mode.

Syntax

other-proto [**name** *string*]

no other-proto [**name** *string*]

Command Default

IP protocol VLANs are configured.

Parameters

name *string*

Specifies the name of the other protocol VLAN configuration. The name can be up to 32 characters in length.

Modes

VLAN configuration mode

IP protocol VLAN configuration mode

IPX protocol VLAN configuration mode

IPv6 protocol VLAN configuration mode

DECnet protocol VLAN configuration mode

NetBIOS protocol VLAN configuration mode

AppleTalk protocol VLAN configuration mode

Usage Guidelines

The **no** form of the command removes the other protocol VLANs.

Examples

The following example shows how to configure the other protocol VLAN.

```
device(config)# ipx-proto name Brown
device(config-vlan-ipx-proto)# other-proto name Block_other_proto
device(config-vlan-other-proto)# no dynamic
```

overlay-gateway

Configures a VXLAN overlay-gateway name and enters gateway configuration mode.

Syntax

overlay-gateway *gateway-name*

no overlay-gateway *gateway-name*

Command Default

Overlay gateway name is not configured.

Parameters

gateway-name

Specifies the name of an overlay-gateway interface. Maximum length is 64 characters.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the gateway configuration.

The command is supported on ICX 7650 and ICX 7850 devices.

Only one virtual extended LAN (VXLAN) overlay-gateway is supported.

Overlay-gateways support IPv4 tunnels only.

The overlay-gateway type must be configured before remote sites (VTEPs) can be configured.

The overlay-gateway address must be configured as a loopback address.

The VLAN to be extended over the overlay-gateway must be mapped to a VXLAN Network Identifier (VNI).

A maximum of 32 remote sites can be configured. For each remote site, you must configure an IP address in site configuration mode. In site configuration mode, you must also extend the mapped VLAN to the site.

Examples

The following example configures the name gate1 for the overlay-gateway, and places the device in overlay-gateway configuration mode.

```
device(config)#overlay-gateway gate1
device(config-overlay-gw-gate1)#
```

The following example configures necessary parameters for the overlay-gateway and configures one remote site.

```
device# configure terminal
device(config)# overlay-gateway gate1
device(config-overlay-gw-gate1)# type layer2-extension
device(config-overlay-gw-gate1)# ip interface loopback 1
device(config-overlay-gw-gate1)# map vlan 2 to vni 3
device(config-overlay-gw-gate1)# site site1
device(config-overlay-gw-gate1-site1)# ip address 67.67.67.1
device(config-overlay-gw-gate1-site1)# extend vlan add 2
device(config-overlay-gw-gate1-site1)# end

device# show running-config overlay-gateway
overlay-gateway gateway1
type layer2-extension
ip interface Loopback 1
map vlan 2 vni 3
site site1
ip address 67.67.67.1
extend vlan add 2

device# show overlay-gateway
Overlay Gateway Name : gateway1
Type : layer2-extension
Source IP Interface : loopback 1 (vrf: default-vrf, IP address: 32.32.31.13)
Total Mapped Vlans : 1
Total Sites : 1
```

History

Release version	Command history
08.0.70	This command was introduced.

owner

Designates a virtual router as the Virtual Router Redundancy Protocol (VRRP) owner and configures priority and track values.

Syntax

owner [**priority** *value*] [**track-priority** *value*]

no owner [**priority** *value*] [**track-priority** *value*]

Command Default

No virtual routers are designated as the VRRP owner.

Parameters

priority *value*

Abdicates owner status by setting a value that is lower than the backup default priority value. Value can be from 1 to 254. Default is 100.

track-priority *value*

Sets the priority value if the tracked port fails. Value can be from 1 to 254. Default is 2.

Modes

VRID interface configuration mode

Usage Guidelines

This command specifies that the device on which it is configured owns the IP address that is associated with the virtual router; making this device the default VRRP master router with its priority set to 255.

This command must be entered before the **ip-address** command can be configured for a VRRP virtual router ID (VRID).

The **no** form of this command removes the virtual router configuration.

Examples

The following example configures the device as the VRRP owner.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.5.1
device(config-if-e1000-1/1/6-vrid-1)# activate
```

The following example configures the device as the VRRP owner and sets the track priority to 10.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# owner track-priority 10
device(config-if-e1000-1/1/6-vrid-1)# ip-address 10.53.5.1
device(config-if-e1000-1/1/6-vrid-1)# activate
```

packet-inerror-detect

Enables the monitoring of a port for inError packets and defines the maximum number of inError packets allowed for the port during the configured sampling interval.

Syntax

packet-inerror-detect *inError-count*

no packet-inerror-detect *inError-count*

Command Default

The Packet InError Detect feature is disabled for the port.

Parameters

inError-count

Specifies the maximum number of inError packets that are allowed for a port during the configured sampling interval. The value can range from 10 through 4294967295.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command disable monitoring of inError packets for the port.

If the number of inError packets received at a port exceeds the default value for two consecutive sampling windows, the port is set to the error-disabled state.

NOTE
To enable monitoring of inError packets for the port only, you must first use the **errdisable packet-inerror-detect** command in global configuration mode to globally enable monitoring for inError packets on the device.

Examples

The following example displays the maximum number of allowed inError packets for a port set to the value 10.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# packet-inerror-detect 10
```

History

Release version	Command history
07.3.00g	This command was introduced.

pass-through

Enables pass-through which allows certain protocol packets to pass through ports that are enabled for Flexible authentication.

Syntax

pass-through { **cdp** | **fdp** | **lldp** }

no pass-through{ **cdp** | **fdp** | **lldp** }

Command Default

Pass-through is not enabled.

Parameters

cdp

Specifies the Cisco Discovery Protocol to pass through.

fdp

Specifies the Foundry Discovery Protocol to pass through.

lldp

Specifies the Link Layer Discovery Protocol to pass through.

Modes

Authentication mode

Usage Guidelines

This command specifies the protocols to be passed through even though the client is not authenticated.

The **no** form of the command disables pass-through.

Examples

The example enables LLDP for pass-through.

```
device(config)# authentication
device(config-authen)# pass-through lldp
```

History

Release version	Command history
08.0.20	This command was introduced.

password

Specifies the password to be used for the key in encrypted form for the cryptographic algorithm.

Syntax

password *passphrase*

no password *passphrase*

Parameters

passphrase

Specifies the password for the key for the cryptographic algorithm, which is encrypted.

Modes

Key ID configuration mode

Usage Guidelines

A key is considered valid only if the key has not expired, and the password and authentication algorithm have been specified.

The **no** form of the command removes the password from the key.

Examples

The following example specifies the password for the key for the cryptographic algorithm.

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)# key-id 10
device(config-keychain-xprotocol-key-10)# password pass
```

History

Release	Command History
08.0.70	This command was introduced.

pdu-rate (EFM-OAM)

Configures the number of Protocol Data Units (PDUs) to be transmitted per second by the Data Terminal Equipment (DTE).

Syntax

pdu-rate *value*

no pdu-rate *value*

Command Default

The default value is one PDU per second.

Parameters

value

Specifies the number of PDUs to be sent per second. The value range can be from 1 through 10 PDUs per second.

Modes

EFM-OAM protocol configuration mode

Usage Guidelines

If the PDU rate is configured as 10 packets per second, PDUs may not get transmitted in a timely manner according to the configured PDU rate.

The **no** form of the command restores the default value of one PDU per second.

Examples

The following example configures the PDU rate as 6 PDUs per second.

```
device(config)# link-oam
device(config-link-oam)# pdu-rate 6
```

History

Release version	Command history
08.0.30	This command was introduced.

peer

Configures the software clock to synchronize a peer or to be synchronized by a peer.

Syntax

peer { *ipv4-address* | *ipv6-address* } [**key** *key-id*] [**maxpoll** *interval*] [**minpoll** *interval*] [**version** *version-number*] [**burst**]

no peer { *ipv4-address* | *ipv6-address* } [**key** *key-id*] [**maxpoll** *interval*] [**minpoll** *interval*] [**version** *version-number*] [**burst**]

Command Default

A peer is not configured.

Parameters

ipv4-address
: Specifies the IPv4 address of the peer providing the clock synchronization.

ipv6-address
: Specifies the IPv6 address of the peer providing the clock synchronization.

key *key-id*
: Specifies the authentication key. The value can range from 1 through 65535. By default, no authentication key is configured.

maxpoll *interval*
: Specifies the longest polling interval. The range is from 4 through 17. The default is 10. The interval argument is a power of 2 (4=16, 5=32, 6=64, 7=128, 8=256, 9=512, and so on).

minpoll *interval*
: Specifies the shortest polling interval. The range is from 4 through 17. The default is 6. The interval argument is a power of 2 (4=16, 5=32, 6=64, 7=128, 8=256, 9=512, and so on).

version *version-number*
: Specifies the Network Time Protocol (NTP) version number. Valid values are 3 and 4. The default value is 4.

burst
: Sends a burst of packets to the server at each polling interval.

Modes

NTP configuration mode

Usage Guidelines

NTP peer mode is intended for configurations where a group of devices operate as mutual backups for each other. If one of the devices loses a reference source, the time values flow from the surviving peers to all the others.

A maximum of eight NTP peers can be configured.

NOTE
The **peer** command is not effective if NTP is enabled in client-only mode.

NOTE
If the peer is a member of a symmetric passive association, configuring the **peer** command will fail.

The **no** form of the command disables the software clock to synchronize a peer.

Examples

The following example configures the software clock.

```
device(config)# ntp
device(config-ntp)# peer 10.2.2.2 key 23 maxpoll 15 minpoll 7 version 4 burst
```

peer disable-fast-failover

Disables the MCT fast-failover mode.

Syntax

peer *peer-ip* **disable-fast-failover**

no peer *peer-ip* **disable-fast-failover**

Command Default

Fast-failover is configured on the device.

Parameters

peer-ip

Specifies the IP address of the peer device.

Modes

Cluster configuration mode

Usage Guidelines

The following failover modes can be configured with MCT:

- Fast-failover (default) - As soon as the ICL interface goes down, the MCT control path between the two peer devices goes down. All the remote MAC addresses are flushed.
- Slow-failover - Even if the ICL interface goes down, the CCP waits for the hold-time before taking the MCT control path between the two peer devices down. Remote MAC addresses are flushed only when the MCT control path between the two peer devices is down.

The **no** form of the command re-enables fast-failover.

Examples

The following example shows how to disable fast-failover.

```
device(config)# cluster SX
device(config-cluster-SX)# peer 10.1.1.3 disable-fast-failover
```

peer timers

Configures the keep-alive and hold-time timers for peer devices.

Syntax

peer *peer-ip* **timers keep-alive** *keep-alive-timer* **hold-time** *hold-timer*

no peer *peer-ip* **timers keep-alive** *keep-alive-timer* **hold-time** *hold-timer*

Command Default

The default value for the keep-alive timer is 10 seconds.

The default value for the hold-time timer is 90 seconds.

Parameters

peer-ip
: Specifies the IP address of the cluster peer.

keep-alive *keep-alive-timer*
: Specifies the keep-alive interval in seconds. The value can range from 0 through 21845 seconds.

hold-time *hold-timer*
: Specifies the hold-time interval in seconds. The value can range from 3 through 65535 seconds (or 0 if the keep-alive timer is set to 0).

Modes

Cluster configuration mode

Usage Guidelines

The *peer-ip* parameter should be in the same subnet as the cluster management interface. The hold-time must be at least three times the keep-alive time.

NOTE
The keep-alive VLAN and keep-alive timers are not related. The keep-alive timer is used by CCP.

The **no** form of the command sets the timers to the default values.

Examples

The following example shows how to configure the peer timers.

```
device(config)# cluster SX 400
device(config-cluster-SX))# peer 10.1.1.3 timers keep-alive 40 hold-time 120
```

peer-info

Configures the peer system ID and system key for a single dynamic Link Aggregation Group (LAG).

Syntax

peer-info sys-mac *mac-address* **sys-pri** *number* **key** *key number*

no peer-info sys-mac *mac-address* **sys-pri** *number* **key** *key number*

Command Default

The peer information of any one of the ports of a dynamic LAG that forms the first LACP trunk within that dynamic LAG, is considered as the peer information.

Parameters

sys-mac *mac-address*

Specifies the system's peer Ethernet MAC address.

sys-pri *number*

Specifies the LACP system priority for the system's peer. Valid numbers range from 0 through 65535.

key *key number*

Specifies the LACP key value. Valid key numbers range from 1 through 65535.

Modes

LAG configuration mode

Usage Guidelines

The **no** form of the command removes the peer information configuration for the dynamic LAG.

Examples

The following example configures the peer system with a system priority of 10 and an LACP key value of 10000.

```
device(config)# lag R4-dyn2
device(config-lag-R4-dyn2)# peer-info sys-mac 0000.0000.0003 sys-pri 10 key 10000
```

History

Release version	Command history
08.0.30d	This command was introduced.

permit (Extended IPv4 ACLs and IPv6 ACLs)

Inserts filtering rules to permit packets in IPv4 extended named or numbered ACLs or IPv6 ACLs.

Syntax

Use the following syntax to define a TCP or UDP rule that will permit packets:

[**no**]**permit**{**tcp**|**udp**}{[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**}{[*source-comparison-operators*] {[**host**]*Destination_IPaddress*[*mask*]|*Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[**established**][*destination-comparison-operators*][**precedence**{*precedence-name*|*precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*] [**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define an ICMP rule that will permit packets:

[**no**]**permiticmp**{[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**}{[**host**]*Destination_IPaddress*[*mask*]| *Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[*icmp-num*|*icmp-type*][**precedence**{*precedence-name*|*precedence-value*}] [**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define a rule for protocols other than TCP, UDP, or ICMP that will permit packets:

[**no**]**permit***ip-protocol* {[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**} {[**host**]*Destination_IPaddress*[*mask*]|*Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[**precedence**{*precedence-name*| *precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax in IPv6 ACLs to define a rule for protocols to permit packets, using either a protocol abbreviation available for IPv6 ACLs or a protocol number:

[**no**]**permit***ip-protocol* {[**host**]*Source_IPaddress*[*mask*]|*Source_hostname*[*Source_IPaddress*][*mask*]|**any**} {[**host**]*Destination_IPaddress*[*mask*]|*Destination_hostname*[*Destination_IPaddress*][*mask*]|**any**}[**dscp-matching***dscp-value*][**routing**] [**fragments**][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**traffic-policy***name*][**log**][**mirror**]

no sequence*seq-num*

Parameters

ip-protocol

Specifies the type of IPv4 packet to filter. You can either specify a protocol number (from 0 through 255) or a supported protocol name. For a complete list of protocols, type **?** after **permit**. Supported protocols include:

- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **igrp**—Internet Gateway Routing Protocol
- **ip**—any IPv4 protocol
- **ospf**—Open Shortest Path First
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

Source_IPaddress
Specifies a source address for which you want to filter the subnet.

mask
Defines a mask, whose effect is to specify a subnet that includes the source address that you specified. For options to specify the mask, see the Usage Guidelines.

host
Depending on placement in the command, specifies the source or destination as a host.

Source_hostname
Specifies the known hostname of the source host.

Destination_hostname
Specifies the known hostname of the destination host.

any
Specifies all source addresses.

source-comparison-operators and *destination-comparison-operators*
If you specified **tcp** or **udp**, the following optional operators are available:

eq
Specifies the address is equal to the port name or number you enter after **eq**.

gt
Specifies port numbers that are equal to or greater than the port number or that are equal to or greater than the numeric equivalent of the port name you enter after **gt**.

lt
Specifies port numbers that are equal to or less than the port number or that are equal to or less than the numeric equivalent of the port name you enter after **lt**.

neq
Specifies all port numbers except the port number or port name you enter after **neq**.

range
Specifies all port numbers that are between the first port name or number and the second name or number you enter following the **range** keyword. Enter the range as two values separated by a space. The first port number in the range must be less than the last number in the range. For example, to apply the policy to all ports between and including 23 (Telnet) and 53 (DNS), enter the following: 23 53 .

Destination_IPaddress
Specifies a destination address for which you want to filter the subnet.

mask
Defines a subnet mask that includes the destination address that you specified. For mask options, refer to the Usage Guidelines.

any
Specifies all destination addresses.

established
(For TCP rules only) Filter packets that have the Acknowledgment (ACK) or Reset (RST) flag set. This policy applies only to established TCP sessions, not to new sessions.

icmp-num|icmp-type
(For ICMP only) Specifies a named or numbered message type.

icmp-num

Specifies a numbered message type. Use this format if the rule also needs to include **precedence**, **tos** , one of the DSCP options, one of the 802.1p options, **internal-priority-marking** , or **traffic-policy**.

any-icmp-type

Specifies any ICMP type.

echo

Specifies an echo request (ping).

echo-reply

Specifies an echo reply.

information-request

Specifies an information request.

mask-reply

Specifies an address mask reply.

mask-request

Specifies an address mask request.

parameter-problem

Specifies a parameter problem.

redirect

Specifies a redirect message.

source-quench

Specifies a relieve congestion message.

time-exceeded

Specifies a time exceeded message.

timestamp-reply

Specifies a timestamp reply.

timestamp-request

Specifies a timestamp request.

unreachable

Specifies a destination-unreachable message.

precedence{*precedence-name*|*precedence-value*}

Specifies a *precedence-name* or corresponding *precedence-value*, as follows:

0 or **routine**

Specifies routine precedence.

1 or **priority**

Specifies priority precedence.

2 or **immediate**

Specifies immediate precedence.

3 or **flash**

Specifies flash precedence.

4 or **flash-override**

Specifies flash-override precedence.

5 or **critical**
Specifies critical precedence.

6 or **internet**
Specifies internetwork control precedence.

7 or **network**
Specifies network control precedence.

tos{*tos-name*|*tos-value*}
Specifies a type of service (ToS). Enter either a supported *tos-name* or the equivalent *tos-value*.

0 or **normal**
Specifies normal ToS.

1 or **min-monetary-cost**
Specifies min monetary cost ToS.

2 or **max-reliability**
Specifies max reliability ToS.

4 or **max-throughput**
Specifies max throughput ToS.

8 or **min-delay**
Specifies min-delay ToS.

fragments
Filters on IPv6 fragments with a non-zero fragment offset.

routing
Filters on IPv6 packets routed from the source.

dscp-matching*dscp-value*
Filters by DSCP value. Values range from 0 through 63.

dscp-marking*dscp-value*
Assigns the DSCP value that you specify to the packet. Values range from 0 through 63.

802.1p-priority-matching *802.1p-value*
Filters by 802.1p priority, for rate limiting. Values range from 0 through 7.

802.1p-priority-marking *802.1p-value*
Assigns the 802.1p value that you specify to the packet. Values range from 0 through 7.

internal-priority-marking *queuing-priority*
Assigns the internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

802.1p-and-internal-marking *priority-value*
Assigns the identical 802.1p value and internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

traffic-policy*name*
Enables the device to limit the rate of inbound traffic and to count the packets and bytes per packet to which ACL permit clauses are applied. For configuration procedures and examples, refer to the chapter "Traffic Policies" in the *RUCKUS FastIron Traffic Management Configuration Guide*.

log
Enables SNMP traps and Syslog messages for the rule. In addition, logging must be enabled using the **logging enable** command.

mirror

Mirrors packets matching the rule.

Modes

IPv4 ACL configuration mode

IPv6 ACL configuration mode

Usage Guidelines

Extended ACLs permit traffic according to source and destination addresses, port protocol, and other IPv4 frame content. You can also enable logging and mirroring.

The order of the rules in an ACL is critical, as the first matching rule stops further processing.

NOTE
Although both IPv4 extended ACLs and IPv6 ACLs can reference any protocol by its protocol number, the available protocol abbreviations differ between IPv4 extended ACLs and IPv6 ACLs,
The following protocol abbreviations are available for IPv4 extended ACLs:

- esp
- gre
- icmp
- igmp
- ip
- ipv6
- ospf
- pim
- rsvp
- tcp
- udp

The following protocol abbreviations are available for IPv6 ACLs:

- ahp
- esp
- icmp
- ipv6
- sctp
- tcp
- udp

A few filtering sub-options are available only in IPv4 or IPv6 ACLs.
The following filtering sub-options are available only in IPv4 extended ACLs:

- precedence
- tos
- 802.1p-and-internal-marking

The following filtering sub-options are available only in IPv6 ACLs:

- fragments
- routing

If you use a hostname to identify a source or destination address, the system resolves its IP address and displays only the IP address (without the associated hostname) in system output, for example, in **show** command output. Because the hostname is resolved as an IP address, it can be used in combination with a mask.

You can specify a mask in either of the following ways:

- Wildcard mask format (for example, 0.0.0.255). The advantage of this format is that it enables you mask any bit, for example by specifying 0.255.0.255.
- Classless Interdomain Routing (CIDR) format, in which you specify the number of bits of the prefix. For example, appending /24 to an IPv4 address is equivalent to specifying 0.0.0.255 in the wildcard mask format.

For IPv4 extended ACLs, the following sub-options are available in match statements when ICMP protocol is configured with an ICMP message type:

- **dscp-marking**
- **dscp-matching**
- **internal-priority-marking**
- **802.1p-priority-marking**
- **802.1p-priority-matching**
- **precedence**
- **tos**

For IPv6, the following sub-options are available in match statements for ICMP protocol and ICMP message type:

- **dscp-marking**
- **dscp-matching**

When specifying type of service (ToS), you can indicate multiple *tos-value* options by entering the sum of the needed ToS options. For example, to specify both **max-reliability** and **min-delay**, enter **10**. To specify all options, enter **15**. Values range from **0** through **15**.

In a rule that includes one or more of the following parameters, the **log** keyword is ignored:

- **dscp-matching**
- **dscp-marking**
- **802.1p-priority-matching**
- **802.1p-priority-marking**
- **802.1p-and-internal-marking**

For details on 802.1p priority matching, refer to "Inspecting the 802.1p bit in the ACL for adaptive rate limiting" in the *RUCKUS FastIron QoS and Traffic Management Configuration Guide*.

To delete a permit rule from an ACL, type **no** followed by the full command syntax.

Examples

```
device# configure terminal
device(config)# ip access-list extended blocktelnet
device(config-ext-ipacl-blocktelnet)# no permit ip any any
device(config-ext-ipacl-blocktelnet)# interface ethernet 1/1/1
device(config-if-1/1/1)# ip access-group blocktelnet in
```

permit (Standard IPv4 ACLs)

Inserts filtering rules in IPv4 standard named or numbered ACLs that will permit packets.

Syntax

permit{*Source_IPaddress*[*mask*]|**host** { *hostname*|*Source_IPaddress*[*mask*]}|**any**}[**log**][**mirror**]

no permit{*Source_IPaddress*[*mask*]|**host** { *hostname*|*Source_IPaddress*[*mask*]}|**any**}[**log**][**mirror**]

Parameters

Source_IPaddress
: Specifies a source address for which you want to filter the subnet.

mask
: Defines a subnet mask to be applied to the source address you specified.

host
: Indicates the source IP address is a host address.

hostname
: Specifies the known hostname associated with a particular source IP address.

Source_IPaddress
: Specifies the souce IP address of the host.

any
: Specifies all source addresses.

log
: Enables logging for the rule.

mirror
: Mirrors packets matching the rule.

Modes

IPv4 ACL configuration mode

Usage Guidelines

This command configures rules to permit traffic based on source addresses. You can also enable logging and mirroring.

Standard ACLs permit traffic according to source address only.

The order of the rules in an ACL is critical, as the first matching rule stops further processing. When creating rules, specifying sequence values determines the order of rule processing. If you do not specify a sequence value, the rule is added to the end of the list. Such a rule is automatically assigned the next multiple of 10 as a sequence number.

You can specify a mask in either of the following ways:

- Wildcard mask format. The advantage of this format is that it enables you to mask any bit, for example by specifying 0.255.0.255.

- Classless Interdomain Routing (CIDR) format—in which you specify the number of bits of the prefix. For example, appending /24 to an IPv4 address is equivalent to specifying 0.0.0.255 in the wildcard mask format.

For the **log** keyword to trigger a log entry, logging must be enabled with the **logging enable** command.

To delete a rule from an ACL, use the **no permit** command followed by the full command syntax.

Examples

The following example shows how to configure a standard numbered ACL and apply it to incoming traffic on port 1/1/1.

```
device# configure terminal
device(config)# ip access-list standard 11
device(config-std-ipacl-11)# deny host 10.157.22.26 log
device(config-std-ipacl-11)# deny 10.157.29.12 log
device(config-std-ipacl-11)# deny host IPHost1 log
device(config-std-ipacl-11)# permit any
device(config-std-ipacl-11)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip access-group 11 in
```

ping

Verifies whether a device can reach another device through the network.

Syntax

ping { *ip-addr* | *host-name* | **vrf** *vrf-name* | **ipv6** [*ipv6-addr* | *host-name* | **vrf** *vrf-name*] [**outgoing-interface** *type number*] } [**source** *ip-addr*] [**count** *num*] [**timeout** *msec*] [**ttl** *num*] [**size** *num*] [**quiet**] [**numeric**] [**no-fragment**] [**verify**] [**data** *1-to-4-byte-hex*] [**brief** [**max-print-per-sec** *number*]]

Parameters

ip-addr

Specifies the IP address of the device to be pinged.

host-name

Specifies the host name of the device to be pinged.

vrf *vrf-name*

Specifies the Virtual Routing and Forwarding (VRF) instance of the device to be pinged.

ipv6 *ipv6-addr*

Specifies the IPv6 address, host name or VRF instance of the device to be pinged.

outgoing-interface *type number*

Specifies an interface over which to verify connectivity.

source *ip-addr*

Specifies an IP address to be used as the origin of the ping packets.

count *num*

Specifies the number of ping packets that the device sends. The value can range from 1 to 4294967296. The default is 1.

timeout *msec*

Specifies the time, in milliseconds for which the device waits for a reply from the pinged device. The value can range from 1 to 4294967296. The default is 5000 (5 seconds).

ttl *num*

Specifies the time to live as a maximum number of hops. The value can range from 1 to 255. The default is 64.

size *num*

Specifies the size of the ICMP data portion of the packet, in bytes. This is the payload and does not include the header. The value can range from 0 to 10000. The default is 16.

no-fragment

Turns on the "don’t fragment" bit in the IP header of the ping packet. This option is disabled by default.

quiet

Hides informational messages such as a summary of the ping parameters sent to the device and instead only displays messages indicating the success or failure of the ping. This option is disabled by default.

verify

Verifies that the data in the echo packet (the reply packet) is the same as the data in the echo request (the ping). By default the device does not verify the data.

data*1-to-4-byte-hex*
Specifies a data pattern for the payload instead of the default data pattern, "abcd", in the packet data payload. The pattern repeats itself throughout the ICMP message (payload) portion of the packet.

brief
Specifies that the ping test characters are to be displayed. For more information, refer to the Usage Guidelines section.

max-print-per-sec *number*
Specifies the maximum number of target responses that the device can display per second while in brief mode. The value can range from 0 to 2047. The default is 511.

Modes

All configuration modes

Usage Guidelines

The following ping test characters are supported:

- !—Indicates that a reply was received.
- .—Indicates that the network server timed out while waiting for a reply.
- U—Indicates that a destination unreachable error PDU was received.
- I—Indicates that the user interrupted the ping.

For numeric parameter values, the command does not check that the value you enter is within the allowed range. Instead, if you do exceed the range for a numeric value, the software rounds the value to the nearest valid value.

NOTE
If the device is a Layer 2 switch or Layer 3 switch, you can use the host name only if you have already enabled the Domain Name Server (DNS) resolver feature on the device from which you are sending the ping.

Examples

The following example checks the connectivity to the device at IP address 10.31.248.12.

```
device> ping 10.31.248.12
Sending 1, 16-byte ICMP Echo to 10.31.248.12, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 10.31.248.12    : bytes=16 time=33ms TTL=63
Success rate is 100 percent (1/1), round-trip min/avg/max=33/33/33 ms.
```

pki authenticate

Authenticates the certificate authority (CA) to the router by obtaining the self-signed certificate of the CA.

Syntax

pki authenticate { *trustpoint* }

no pki authenticate { *trustpoint* }

Command Default

The CA is not authenticated.

Parameters

trustpoint

Specifies the name of the trustpoint (CA) to be authenticated.

Modes

Global configuration mode

Usage Guidelines

The no form of the command removes both authentication and enrollment of the trustpoint.

The certificate obtained from the CA is saved to the router.

The self-signed certificate obtained from the CA contains the public key for the CA.

Examples

The following example authenticates the trustpoint named ruckus.

```
device# configure terminal
device(config)# pki authenticate ruckus
```

pki cert-validate

Determines if a trustpoint has been successfully authenticated.

Syntax

pki cert-validate { *trustpoint* }

Parameters

trustpoint

Designates the name of the trustpoint to be checked.

Modes

Global configuration mode

Examples

The following example confirms that the trustpoint abcd has been successfully authenticated.

```
device# configure
device(config)# pki cert-validate abcd
PKI: Successfully validated the local certificate for trustpoint: abcd
```

pki enroll

Requests certificates from the certificate authority (CA) for each key pair of the router.

Syntax

pki enroll { *trustpoint* }

no pki enroll { *trustpoint* }

Command Default

The router is not enrolled on the CA trustpoint.

Parameters

trustpoint

Specifies the name of the trustopint where the router is to be enrolled.

Modes

Global configuration mode

Usage Guidelines

The no form of the command removes the certificates from the router.

Examples

The following example enrolls the router on the CA with the truspoint name ruckus

```
device# configure terminal
device(config)# pki enroll ruckus
```

pki-entity

Configures a PKI entity and enters a configuration sub-mode where you can define PKI end-user parameters.

Syntax

pki-entity { *entity* }

no pki-entity { *entity* }

Parameters

entity

Names the entity for which parameters are to be configured.

Modes

Global configuration mode

Usage Guidelines

The no form of the command removes the PKI entity and its configured parameters.

PKI entity configuration is used for auto-enrollment only.

Examples

The following example enters PKI-entity configuration submode and configures PKI parameters.

```
device# configure terminal
device(config)# pki entity entity1
device(config-pki-entity-entity1)# common-name "tester1"
device(config-pki-entity-entity1)# country-name "IN"
device(config-pki-entity-entity1)# state-name "KA"
device(config-pki-entity-entity1)# org-unit-name "FI"
device(config-pki-entity-entity1)# org-name "BRCD"
device(config-pki-entity-entity1)# email-id "user@arris.com"
device(config-pki-entity-entity1)# location "BG"
device(config-pki-entity-entity1)#
device(config-pki-entity-entity1)# exit
```

pki profile-enrollment

Enters PKI enrollment configuration submode, where you can onfigure PKI enrollment parameters.

Syntax

pki profile-enrollment { *profile* }

no pki profile-enrollment { *profile* }

Parameters

profile

Designates the name of the profile for which parameters are configured.

Modes

Global configuration mode

Usage Guidelines

The no form of the command removes the profile and its configured parameters.

Examples

The following example configures PKI enrollment profile profile1.

```
device# configure terminal
device(config)# pki profile-enrollment profile1
device(config-pki-profile-enrollment-profile1)# authentication-url http://WINN6C3R0LUDAJ.
englab.arris.com/CertSrv/mscep/mscep.dll
device(config-pki-profile-enrollment-profile1)# authentication-command WINN6C3R0LUDAJ.
englab.arris.com_englab-WIN-N6C3R0LUDAJ-CA-15
device(config-pki-profile-enrollment-profile1)# enrollment-url http://WINN6C3R0LUDAJ.
englab.arris.com/CertSrv/mscep/mscep.dll
device(config-pki-profile-enrollment-profile1)# password DB6E1F091AEF0244
device(config-pki-profile-enrollment-profile1)# exit
```

pki trustpoint

Enters PKI trustpoint configuration mode, where PKI CA parameters can be configured.

Syntax

pki trustpoint { *trustpoint* }

no pki trustpoint { *trustpoint* }

Parameters

trustpoint

Names the trustpoint for which parameters are configured.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the trustpoint and its parameters.

Examples

The following example configures the PKI trustpoint trust1.

```
device# configure terminal
device(config)# pki trustpoint trust1
device(config-pki-trustpoint-trust1)# auto-enroll
device(config-pki-trustpoint-trust1)# enrollment retry-period 2
device(config-pki-trustpoint-trust1)# enrollment profile profile1
device(config-pki-trustpoint-trust1)# pki-entity entity1
device(config-pki-trustpoint-trust1)# eckeypair key-label eckeyAuto
device(config-pki-trustpoint-trust1)# fingerprint 36:0c:92:6e:df:b2:72:eb:59:e8:63:73:2a:98:a8:91:cb:
50:94:d9
device(config-pki-trustpoint-trust1)# ocsp http post
device(config-pki-trustpoint-trust1)# exit
```

The following example shows the configuration options available in PKI trustpoint configuration sub-mode.

```
device(config-pki-trustpoint-trust2)# ?
auto-enroll                       To send enrollment message to the CA and local

                                 certificates.
clear                             Clear table/statistics/keys.
crl-query                         To set crl query url.
crl-update-time                   To set the CRL update period.
eckeypair                         To specify which ec keypair to use during
                                  enrollment.
end                               End Configuration level and go to Privileged
                                  level.
enrollment                        To set enrollment retry count, retry period or

                                 profile.
exit                              Exit current level.
extended-key-usage                To set or unset extended key usage parameters.
fingerprint                       To set fingerprint of the CA.
local-certificate                 URL of the local certificate.
no                                Undo/disable commands.
ocsp                              To set http method for ocsp request.
ocsp-url                          To set the oscp url.
pki-entity                        The PKI entity parameter to be used while enrolling

                                 to the CA.
quit                              Exit to User level.
revocation-check                  To specify which method to be followed for revocation
                                  check.
rsakeypair                        To specify which rsa keypair to use during
                                  enrollment.
show                              Show system information.
write                             Write running configuration to flash or terminal.
<cr>
device(config-pki-trustpoint-trust2)#
```

poison-local-routes

Configures the device to avoid routing loops by advertising local RIP or RIPng routes with a cost of 16 (infinite or unreachable) when these routes go down.

Syntax

poison-local-routes

no poison-local-routes

Command Default

By default, RIP or RIPng routers add a cost of 1 to RIP or RIPng routes advertised to neighbors.

Modes

RIP router configuration mode or RIPng router configuration mode

Usage Guidelines

Use the **no** form of the poison-local-routes command to disable these poison route updates for local routes that go down.

Examples

The following example configures the RIP router to trigger an update to advertise local RIP routes as unreachable when they go down.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# poison-local-routes
```

The following example configures the RIPng router to trigger an update when local routes go down to advertise them as unreachable.

```
device# configure terminal
device(config)# ipv6 router rip
device(config-ripng-router)# poison-local-routes
```

poison-reverse

Enables poison reverse loop prevention, either globally or on an individual interface, by assigning an "unreachable" cost to a route before advertising it on the interface where the route was learned. The global command can be used for RIP or RIPng routes.

Syntax

poison-reverse

ip rip poison-reverse

no poison-reverse

no ip rip poison-reverse

Command Default

By default, split horizon loop prevention is in effect. Split horizon does not advertise a route on the same interface as the one on which the device learned the route.

Modes

RIP router configuration mode, RIPng router configuration mode, or interface configuration mode

Usage Guidelines

The **no** form of the command disables poison reverse loop prevention.

Either poison reverse or split horizon loop prevention is always in effect on an interface enabled for RIP. When poison reverse is disabled, split horizon loop prevention is applied.

Examples

The following command enables poison reverse loop prevention for RIP on a device.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# poison-reverse
```

The following example disables poison reverse and re-asserts split horizon loop prevention for RIP on the device.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# no poison-reverse
```

The following example enables poison reverse for RIP routes on Ethernet interface 1/2/3.

```
device# configure terminal
device(config)# interface ethernet 1/2/3
device(config-if-e10000-1/2/3)# ip rip poison-reverse
```

The following example enables poison reverse for RIPng on a device.

```
device# configure terminal
device(config)# ipv6 router rip
device(config-ripng-router)# poison-reverse
```

pool (DHCPv6)

Configures a DHCPv6 server pool.

Syntax

pool *string*

no pool *string*

Command Default

By default the DHCPv6 server pool, dhcp6_pool, is configured on the system if no DHCPv6 server pool is configured, and is valid on the configured subnet on the server.

Modes

DHCPv6 server configuration mode

Usage Guidelines

To use this command, you must upgrade to FI 08.0.90 using the Unified FastIron Image (UFI). Refer to the "Software Upgrade and Downgrade" chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The **no** form of the command removes a configured DHCPv6 server pool and removes all subnets that are part of the current pool.

Examples

The following example configures a DHCPv6 server pool "test_pool".

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# pool test_pool
```

History

Release version	Command history
08.0.90b	This command was introduced.

port security

Enters port security configuration mode.

Syntax

port security

Modes

Global configuration mode

Usage Guidelines

Use the **enable** command to enable port security.

Examples

The following example shows how to enter port security configuration mode.

```
device(config)# port security
device(config-port-security)#
```

port-down-authenticated-mac-cleanup

Enables forced reauthentication of the hosts if all the ports on the device go down.

Syntax

port-down-authenticated-mac-cleanup

no port-down-authenticated-mac-cleanup

Command Default

Forced reauthentication of hosts is enabled.

Modes

Web Authentication configuration mode

Usage Guidelines

When the command is enabled, the device checks the link state of all ports that are members of the Web Authentication VLAN. If the state of all the ports is down, then the device forces all authenticated hosts to reauthenticate. However, hosts that were authenticated using the **add mac** command will remain authenticated; they are not affected by the **port-down-authenticated-mac-cleanup** command.

The **no** form of the command removes forced reauthentication of the hosts.

Examples

The following example enables forced reauthentication of all hosts when all the ports are down.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# port-down-authenticated-mac-cleanup
```

port-name

Configures the names of individual ports or a group of ports.

Syntax

port-name *text*

no port-name *text*

Command Default

A port name is not configured.

Parameters

text

Configures the name of the port or the name of a range of ports. The name is an alphanumeric string and can be up to 255 characters long.

Modes

Interface configuration mode

Usage Guidelines

You can assign a port name to physical ports, virtual interfaces, and loopback interfaces. The port name can contain blank spaces. The port name can also contain special characters, but the percentage character (%) is dropped if it is the last character in the port name.

The **no** form of the command removes the assigned port name.

Examples

The following example assigns a name to a port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port-name Marsha
```

The following example assigns a name to a range of ports.

```
device(config)# interface ethernet 1/1/1 to 1/1/10
device(config-mif-1/1/1-1/1/10)# port-name connected-to-the nearest device
```

The following example assigns a name to multiple ports.

```
device(config)# interface ethernet 1/1/1 ethernet 1/1/5 ethernet 1/1/7
device(config-mif-1/1/1,1/1/5,1/1/7)# port-name connected-to-the nearest device
```

port-name (LAG)

Assigns a port name to an individual port in a LAG.

Syntax

port-name *name* **ethernet** *stackid/slot/port*

no port-name *name* **ethernet** *stackid/slot/port*

Command Default

A port name is not assigned to an individual port within a LAG.

Parameters

name

Specifies the name of an individual port in a LAG. The name can be up to 255 characters in length.

ethernet *stackid/slot/port*

Specifies the Ethernet port to which the name must be assigned.

Modes

LAG configuration mode

Usage Guidelines

When creating a port name in a LAG, you can use all uppercase or lowercase characters, as well as digits. Special characters (such as $, %, ', -, ., @, ~, `, !, (,), {, }, ^, #, and &) are valid. You can use spaces in the port name as long as you enclose the name in double quotation marks. For example, to specify a port name that contains spaces, enter a string similar to the following example: "a long and lengthy port name".

NOTE
A port name with spaces must be enclosed within double quotation marks.

The **no** form of the command removes the name assigned to the individual port.

Examples

The following example shows how to assign a name to a port in a LAG.

```
device(config)# lag "test" dynamic id 1
device(config-lag-test)# ports ethernet 1/1/1 to 1/1/3
device(config-lag-test)# port-name "lag1" ethernet 1/1/1
```

port-statistics-reset-timestamp enable

Enables the display of the elapsed timestamp information in the output of the **show statistics** command.

Syntax

port-statistics-reset-timestamp enable

no port-statistics-reset-timestamp enable

Command Default

The elapsed time after the recent reset of the port statistics counters is not displayed in the **show statistics** command output.

Modes

Global configuration mode

Usage Guidelines

The elapsed time is calculated as the time between the most recent reset of the port statistics counters and the time when the **show statistics** command is executed.

The **port-statistics-reset-timestamp enable** command enables the display of the elapsed timestamp information for all the ports in the output of the **show statistics** command.

The **no** form of the command removes the display of the elapsed time after the most recent reset of the port statistics counters in the **show statistics** command output.

Examples

The following example enables the display of the elapsed time between the most recent reset of the port statistics counters and the time when the **show statistics** command is executed.

```
device (config)# port-statistics-reset-timestamp enable
```

History

Release version	Command history
08.0.30	This command was introduced.

ports

Adds ports in a LAG.

Syntax

ports ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

no ports ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] ...]

Command Default

No ports are added to the LAG.

Parameters

ethernet *stackid/slot/port*

Adds an Ethernet interface to a LAG.

to *stackid/slot/port*

Adds a range of Ethernet interfaces to the LAG.

Modes

LAG configuration mode

Usage Guidelines

A static or dynamic LAG can have 1 to 8 or 1 to 16 ports (depending on the device you are using) of the same type and speed that are on any interface module within the RUCKUS chassis. A keep-alive LAG consists of only one port.

Ports can be added to an undeployed LAG or to a currently deployed LAG. If removal of a port will result in the trunk threshold value becoming greater than the number of ports in the LAG, the port deletion will be rejected. When you remove a port from a deployed LAG, the port is disabled automatically.

The **no** form of the command removes the ports from a LAG.

Examples

The following example shows how to configure a static LAG with two ports.

```
device(config)# lag blue static id 1
device(config-lag-blue)# ports ethernet 1/3/1 ethernet 1/3/2
```

The following example adds a range of ports to the LAG.

```
device(config)# lag blue static
device(config-lag-blue)# ports ethernet 1/3/1 to 1/3/4
```

The following example adds a range of ports from one interface module and an individual port from another interface module to the LAG.

```
device(config)# lag blue static
device(config-lag-blue)# ports ethernet 1/3/1 to 1/3/4 ethernet 1/2/2
```

preferred-lifetime (DHCPv6)

Specifies the length of time that the DHCPv6 server keeps the IPv6 prefix active.

Syntax

preferred-lifetime *interval*

Command Default

The preferred lifetime interval is 0 seconds by default.

Parameters

interval

Specifies the time interval in seconds. Valid values range from 0 through 4294967295. The default is 0.

Modes

DHCPv6 server configuration mode

DHCPv6 subnet configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the "Software Upgrade and Downgrade" chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

Once the configured time interval expires, the IPv6 prefix is deprecated. The preferred lifetime interval must be less than or equal to the valid lifetime interval. Refer to the **valid-lifetime** command for more information.

When configuring the DHCPv6 server using this command along with the **valid-lifetime (DHCPv6)**, **renewal-time (DHCPv6)**, and **rebind-time (DHCPv6)** commands, enter the commands in the following order:

1. **preferred-lifetime (DHCPv6)**
2. **valid-lifetime (DHCPv6)**
3. **rebind-time (DHCPv6)**
4. **renewal-time (DHCPv6)**

NOTE
Failure to enter the commands in the order outlined previously when configuring the DHCPv6 server results in a CLI error.

If a preferred lifetime is not configured in DHCPv6 subnet configuration mode, the globally configured preferred lifetime is inherited.

The **no** form of the command restores the default.

Examples

The following example sets the preferred lifetime to 200 seconds.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# preferred-lifetime 200
```

The following example sets the preferred lifetime to 100 seconds in DHCPv6 subnet configuration mode.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# subnet6 3ffe:501:ffff:100::/64
device(config-dhcpv6-subnet)# preferred-lifetime 100
```

History

Release version	Command history
08.0.90	This command was introduced.

Related Commands

valid-lifetime (DHCPv6)

prefix6 (DHCPv6)

Assigns a range of IPv6 prefixes to a subnet.

Syntax

prefix6 *low IPV6 prefix address high IPV6 prefix address*

Command Default

Not configured by default.

Parameters

low IPV6 prefix address high IPV6 prefix address

Assigns IPv6 prefixes in the specified range.

Modes

DHCPv6 subnet configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the "Software Upgrade and Downgrade" chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The **no** form of the command removes the assigned prefixes

Examples

The following example assigns IPv6 prefixes to a subnet.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# subnet6 6fee:100:ddde:402::/64
device(config-dhcpv6-subnet)# prefix6 6fee:100:ddde:402::/64 6fee:100:ddde:410::/64
```

History

Release version	Command history
08.0.90	This command was introduced.

prefix-list

Associates an IPv6 prefix list with a Router Advertisement (RA) guard policy.

Syntax

prefix-list *name*

no prefix-list *name*

Parameters

name

Specifies the name of the IPv6 prefix list to associate with the RA guard policy.

Modes

RA guard policy configuration mode

Usage Guidelines

This command associates an IPv6 prefix list with an RA guard policy so that only the RAs that have the given prefix are forwarded. You must provide the name of an IPv6 prefix list already configured using the **ipv6 prefix-list** command. For more information on configuring an IPv6 prefix list using the **ipv6 prefix-list** command, see the *FastIron Ethernet Switch Layer 3 Routing Configuration Guide* .

Only one prefix list can be associated with an RA guard policy. If the command is configured twice with different prefix lists, the latest configured prefix list is associated with the RA guard policy.

The **no** form of the command deletes the prefix list from the RA guard policy.

Examples

The following example associates an IPv6 prefix list with an RA guard policy:

```
device(config)# ipv6 prefix-list raguard-prefix1
device(config)# ipv6 raguard policy p1
device(config-ipv6-RAG-policy p1)# prefix-list raguard-prefix1
```

Related Commands

neighbor prefix-list

prefix-list (RIP)

Applies a pre-configured prefix list to permit or deny RIP routes globally.

Syntax

prefix-list *name* { **in** | **out** }

no prefix-list *name* { **in** | **out** }

ip rip prefix-list *name* { **in** | **out** }

no ip rip prefix-list *name* { **in** | **out** }

Parameters

name
: Specifies the pre-configured prefix list to be applied.

in
: Applies the specified prefix list to routes the device learns from its neighbors.

out
: Applies the specified prefix list to routes the device advertises to its neighbors.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command removes the prefix filter.

Prefix lists must be configured with the **ip prefix-list** command before they are applied.

The **ip rip prefix-list** command can be used to apply a prefix list at the interface level.

Examples

The following command globally applies the prefix list named list1 to routes that the RIP router learns from its neighbors.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# prefix-list list1 in
```

The following command applies the prefix list named test1 to RIP routes advertised on Ethernet interface 1/1/2.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e10000-1/1/2)# ip rip prefix-list test1 out
```

preforwarding-time

Configures the preforwarding time interval, the time a port will remain in the preforwarding state before changing to the forwarding state.

Syntax

preforwarding-time *milliseconds*

no preforwarding-time *milliseconds*

Command Default

The default preforwarding time interval is 300 milliseconds.

Parameters

milliseconds

The preforwarding time interval in milliseconds. The range is from 200 through 30000 milliseconds.

Modes

MRP configuration mode

Usage Guidelines

The preforwarding time interval must be at least twice the value of the hello time or a multiple of the hello time.

When MRP is enabled, all ports begin in the preforwarding state.

An interface changes from the preforwarding state to the forwarding state when the port preforwarding time expires. This occurs if the port does not receive a Ring Health Packet (RHP) from the master, or if the forwarding bit in the RHPs received by the port is off (indicating a break in the ring). The port heals the ring by changing its state to forwarding. If a member port in the preforwarding state does not receive an RHP within the preforwarding time, the port assumes that a topology change has occurred and changes to the forwarding state.

The secondary port on the master node changes to the blocking state if it receives an RHP, but changes to the forwarding state if the port does not receive an RHP before the preforwarding time expires. A member node preforwarding interface also changes from preforwarding to forwarding if it receives an RHP whose forwarding bit is on.

If Unidirectional Link Detection (UDLD) is also enabled on the device, RUCKUS recommends that you set the MRP preforwarding time slightly higher than the default of 300 ms; for example, to 400 or 500 ms.

The **no** form of the command sets the preforwarding time interval to the default.

Examples

The following example shows how to configure the preforwarding time to 400 milliseconds.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-1)# preforwarding-time 400
```

pre-shared-key

Configures the pre-shared MACsec key on the interface.

Syntax

pre-shared-key*key-id***key-name***hex-string*

no pre-shared-key*key-id***key-name***hex-string*

Command Default

No pre-shared MACsec key is configured on the interface.

Parameters

key-id

Specifies the 32 hexadecimal value used as the Connectivity Association Key (CAK).

key-name*hex-string*

Specifies the name for the CAK key. Use from 2 through 64 hexadecimal characters to define the key name. The name must be entered as a multiple of 8 bits.

Modes

dot1x-mka interface mode

Usage Guidelines

The **no** form of the command removes the pre-shared key from the interface.

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

The pre-shared key is required for communications between MACsec peers.

Examples

The following example configures MKA group test1 and assigns the MACsec pre-shared key with a name beginning with 96437a93 and with the value shown, to port 2, slot 3 on the first device in the stack.

```
device(config)#dot1x-mka-enable
device(config-dot1x-mka)# mka-cfg-group test1
device(config-dot1x-mka-group-test1)# key-server-priority 5
device(config-dot1x-mka-group-test1)# macsec cipher-suite gcm-aes-128
device(config-dot1x-mka-group-test1)# macsec confidentiality-offset 30
device(config-dot1x-mka-group-test1)# exit
device(config-dot1x-mka)# enable-mka ethernet 1/3/2
device(config-dot1x-mka-1/3/2)# mka-group test1
device(config-dot1x-mka-1/3/2)# pre-shared-key 135bd758b0ee5c11c55ff6ab19fdb199 key-name
96437a93ccf10d9dfe347846cce52c7d
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

prf

Configures a pseudorandom function (PRF) for an Internet Key Exchange version 2 (IKEv2) proposal.

Syntax

prf { **sha256** | **sha384** }

no prf { **sha256** | **sha384** }

Command Default

The default algorithm is SHA-384.

Parameters

sha256

Specifies SHA-2 family 256-bit (HMAC variant) as the hash algorithm.

sha384

Specifies SHA-2 family 384-bit (HMAC variant) as the hash algorithm.

Modes

IKEv2 proposal configuration mode

Usage Guidelines

This hash algorithm is used to generate key material during IKEv2 SA negotiations.

Both algorithms may be configured for an IKEv2 proposal.

When only one PRF algorithm is configured for an IKEv2 proposal, removing it restores the default configuration.

The **no** form of the command removes the specified PRF algorithm configuration.

Examples

The following example shows how to configure SHA-256 as the hash algorithm for an IKEv2 proposal named ikev2_prop.

```
device(config)# ikev2 proposal ikev2_prop
device(config-ikev2-proposal-ikev2_prop)# prf sha256
```

History

Release version	Command history
08.0.50	This command was introduced.

priority

Configures a priority value for the device. This value is used along with other factors to determine controller election if a stack failover or merge occurs.

Syntax

priority *num*

no priority

Command Default

The priority value for the active controller and standby device is 128.

Parameters

num

Possible values are 0 to 255. Lower values assign a lower priority to the device, and higher values assign a higher priority to the device.

Modes

Stack unit configuration mode

Usage Guidelines

The **no** form of the command restores the default priority value to the device (128). You do not have to specify the default value when using the **no** form.

A unit that has a relatively high priority value is more likely to be elected to be the active controller.

When you change the priority value assigned to a stack unit, the value takes effect immediately but does not affect the active controller until the next reset.

When the active and standby controller have the same priority value, other factors affect controller election, such as up-time and number of members controlled.

Examples

The following example assigns a priority value of 130 to stack unit 1.

```
device(Config)# stack unit 1
device(Config-unit-1)# priority 130
```

History

Release version	Command history
08.0.01	This command was introduced.

priority-flow-control

Enables priority flow control (PFC) on a priority group.

Syntax

priority-flow-control*priority-group-number*

no priority-flow-control*priority-group-number*

Command Default

PFC is disabled globally.

Parameters

priority-group-number

Specifies a priority group. The range is from 0 through 3.

Modes

Global configuration mode

Usage Guidelines

This command is supported for RUCKUS ICX 7550 and ICX 7850 devices only.

To enable global PFC, symmetrical flow control (SFC) must be disabled.

You must enable PFC globally before you configure it for priority groups. Enabling PFC on a priority group enables PFC on all the ports.

PFC and 802.3x flow control are mutually exclusive. Configuring the **priority-flow-control** command disables 802.3x in both transmit and receive directions.

PFC is not supported at the interface level on ICX 7850 devices.

The **no** form of this command restores the default flow-control settings.

Examples

The following example enables PFC for priority group 2:

```
device(config)# priority-flow-control enable
device(config)# priority-flow-control 2
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.20	This command was modified. Specifying a priority group no longer enables PFC on all ports.

Release version	Command history
09.0.10a	PFC support was extended to ICX 7850 devices at the global level.

priority-flow-control enable

Enables priority flow control (PFC) globally or on an individual port.

Syntax

priority-flow-control enable

no priority-flow-control enable

Command Default

PFC is disabled (globally and on all ports).

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

This command is supported for RUCKUS ICX 7550 and ICX 7850 devices only.

To enable global PFC, symmetrical flow control (SFC) must be disabled.

You must enable PFC globally before you configure it for priority groups.

In global configuration mode, configuring the **priority-flow-control enable** command enables PFC globally; in interface configuration mode, configuring the command enables PFC on a port. You can configure the **priority-flow-control enable** command in interface configuration mode to enable both PFC transmit and receive, which means PFC is both honored and generated. PFC must be enabled on at least one priority group before you can configure the **priority-flow-control enable** command on an interface.

PFC is not supported at the interface level on ICX 7850.

Priority flow control and 802.3x flow control are mutually exclusive; therefore, configuring the **priority-flow-control enable** command disables 802.3x in both the transmit and receive directions.

The **no** form of the command restores the default flow control settings in global configuration mode and disables PFC on the interface in interface configuration mode.

Examples

The following example enables PFC globally.

```
device(config)# priority-flow-control enable
```

The following example enables PFC on an interface.

```
device(config-if-e10000-1/1/1)# priority-flow-control enable
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.20	This command was modified to add enabling PFC on a port.
09.0.10a	PFC support was extended to ICX 7850 at the global level.

privilege

Configures the management privilege access level of a command.

Syntax

privilege*command-mode***level***privilege-level***command-string*

no privilege*command-mode***level***privilege-level***command-string*

Parameters

command-mode

Specifies the command mode (CLI level) of the command for which the access level is to be enhanced.
The following values are available:

- **exec** - EXEC level; for example, device> or device#
- **configure** - global configuration level; for example, device(config)#
- **interface** - Interface level; for example, device(config-if-e1000-1/2/3)#
- **loopback-interface** - Loopback interface configuration sub-mode
- **virtual-interface** - Virtual-interface configuration sub-mode; for example, device(config-vif-6)#
- **dot1x** - 802.1X configuration sub-mode
- **ipv6-access-list** - IPv6 access list configuration sub-mode
- **rip-router** - RIP router configuration sub-mode; for example, device(config-rip-router)#
- **ospf-router** - OSPF router configuration sub-mode; for example, device(config-ospf-router)#
- **dvmrp-router** - DVMRP router configuration sub-mode; for example, device(config-dvmrp-router)#
- **pim-router** - PIM router configuration sub-mode; for example, device(config-pim-router)#
- **bgp-router** - BGP4 router configuration sub-mode; for example, device(config-bgp-router)#
- **vrrp-router** - VRRP configuration sub-mode
- **trunk** - trunk configuration sub-mode
- **port-vlan** - Port-based VLAN configuration sub-mode; for example, device(config-vlan)#
- **protocol-vlan** - Protocol-based VLAN configuration sub-mode
  Enter **?** to check for available interface subtypes.

level*privilege-level*

Specifies the number of the management privilege level you are augmenting. Valid values are as follows:

- 0 - Super User level (full read-write access)
- 4 - Port Configuration level
- 5 - Read Only level.

command-string

Specifies the command you want to assign the specified privilege level.
Enter **?** at the command prompt of a CLI level to display the list of commands at that level.

Modes

Global configuration mode

Usage Guidelines

Each management privilege level provides access to specific areas of the CLI by default. You can grant additional access to a privilege level on an individual command basis. To grant the additional access, specify the privilege level you are enhancing, the CLI level that contains the command, and the individual command.

Super User management privilege provides access to all commands and displays.

Port Configuration management privilege provides access to the following levels:

- The User EXEC
- Privileged EXEC
- The port-specific parts of global configuration
- All interface configuration.

Read Only management privilege level gives access to the following levels:

- User EXEC
- Privileged EXEC

NOTE
The **privilege** command applies only to management privileges for the CLI.

The **no** form of the **privilege** command removes the configuration and resets default privilege levels.

Examples

The following example shows how to enhance the Port Configuration privilege level so users also can enter IP commands at the global configuration level.

All users with Port Configuration privileges receive the enhanced access after the command is entered. Executing this command will enable users who log in with valid Port Configuration level user names and passwords to execute commands that start with "ip" at the global configuration level.

```
device# configure terminal
device(config)# privilege configure 4 ip
```

profile-config

Configures the port buffer, queue buffer, port descriptor, and queue descriptor for a port.

Syntax

profile-config { **port-buffers** *buffer-number* | **port-descriptors** *descriptor-number* | **port-type** { **0** | **1** | **2** | **3** } | **queue-buffers** *egress-queue-number buffer-number* | **queue-descriptors** *egress-queue-number descriptor-number* }

no profile-config { **port-buffers** *buffer-number* | **port-descriptors** *descriptor-number* | **port-type** { **0** | **1** | **2** | **3** } | **queue-buffers** *egress-queue-number buffer-number* | **queue-descriptors** *egress-queue-number descriptor-number* }

Command Default

The default port type is set to 1 Gbps.

The default buffers and descriptors are set according to the port type.

Parameters

port-buffers *buffer-number*
Configures the maximum buffer limit for the port.

port-descriptors *descriptor-number*
Configures the maximum descriptor limit for the port.

port-type
The port type for the user-configurable buffer profile.

0
Specifies the port type as 1 Gbps, 10 Gbps, or 40 Gbps.

1
Specifies the port type as 1 Gbps.

2
Specifies the port type as 10 Gpbs.

3
Specifies the port type as 40 Gbps.

queue-buffers
Configures the maximum buffer limit for the queues.

egress-queue-number
Specifies the egress queue number (0 through 7).

buffer-number
Specifies the buffer number.

queue-descriptors
Configures the maximum descriptor limit for the queues.

descriptor-number
Specifies the descriptor number.

Modes

Buffer profile configuration mode

Usage Guidelines

To configure a user-configurable profile for 10 Gbps ports, the 10 Gbps port type must be explicitly provided by the **port-type** option. Modifications to buffers and descriptors of a port and its queues take effect dynamically.

When the profile type is configured as all 1 Gbps, 10 Gbps, and 40 Gbps ports, the default buffers and descriptors will be set according to the port type; that is, all 1 Gbps ports use 1 Gbps defaults and 10 Gbps ports use 10 Gbps defaults. If you configure a port and its queue with egress buffer and descriptor limits, then the configured limits are used for both 1 Gbps and 10 Gbps ports.

Port type modification resets the profile to its default value. All the port and queue buffers and descriptors will be set to either 1 Gbps or 10 Gbps defaults as per the configuration, which means all the user configurations for the port and its queues will be lost.

NOTE
Port type modifications on an active profile are not allowed.

The **no** form of the command with the **port-type** option sets the profile port type to 1 Gbps.

Examples

The following example sets the port type to 10 Gbps.

```
device(config)# qd-buffer-profile 1
device(qd-profile-1)# profile-config port-type 3
```

The following example configures the port buffers.

```
device(config)# qd-buffer-profile 1
device(qd-profile-profile1)# profile-config port-buffers 8000
```

The following example configures the port descriptors.

```
device(config)# qd-buffer-profile 1
device(qd-profile-profile1)# profile-config port-descriptors 8000
```

The following example configures the queue buffer.

```
device(config)# qd-buffer-profile 1
device(qd-profile-profile1)# profile-config queue-buffers 2 600
```

The following example configures the queue descriptors.

```
device(config)# qd-buffer-profile 1
device(qd-profile-profile1)# profile-config queue-descriptors 2 600
```

proposal (IKEv2)

Configures an Internet Key Exchange version 2 (IKEv2) proposal for an IKEv2 policy.

Syntax

proposal *name*

no proposal *name*

Command Default

The default IKEv2 proposal (**def-ike-prop**) is configured for an IKEv2 policy.

Parameters

name

Specifies the name of an IKEv2 proposal.

Modes

IKEv2 policy configuration mode

Usage Guidelines

At least one IKEv2 proposal must be configured for an IKEv2 policy.

Multiple IKEv2 proposals may be configured for an IKEv2 policy.

When only one IKEv2 proposal is configured for an IKEv2 policy, removing it restores the default configuration.

The **no** form of the command removes the specified IKEv2 proposal from the IKEv2 policy configuration.

Examples

The following example shows how to configure an IKEv2 proposal named ikev2_proposal1 for an IKEv2 policy named ikev2_policy1.

```
device# configure terminal
device(config)# ikev2 policy ikev2_policy1
device(config-ike-policy-ikev2_policy1)# proposal ikev2_proposal1
```

History

Release version	Command history
08.0.50	This command was introduced.

protected

Configures VRF traffic protection for an Internet Key Exchange version 2 (IKEv2) profile.

Syntax

protected *vrf*

no protected *vrf*

Parameters

vrf

Specifies the name of the VRF to be protected.

Modes

IKEv2 profile configuration mode

Usage Guidelines

When the tunnel VRF and the protected VRF do not match, an IKEv2 session is not initiated.

The **no** form of the command removes the specified VRF traffic protection configuration for the IKEv2 profile.

Examples

The following example shows how to configure an IKEv2 profile named test to protect traffic for a VRF named red.

```
device(config)# ikev2 profile test
device(config-ikev2-profile-test)# protected red
```

History

Release version	Command history
08.0.50	This command was introduced.

protected-port

Configures a port as protected, restricting communication among such ports at the system level, providing isolation to end hosts.

Syntax

protected-port

no protected-port

Command Default

Protected port is not enabled.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of this command to disable the protected port feature.

The following configurations are supported with the protected port feature:

- Port MAC security
- 802.1x security
- DHCP snooping
- Control protocols
- Aggregated ports (LAGs)

The following should not be configured as protected ports:

- Uplink ports
- DHCP server ports
- ARP inspection trusted ports
- DHCP snooping trusted ports
- Ports on an active xSTP path in a device
- IGMP/MLD snooping router ports
- IGMP/MLD source ports

In addition, it is recommended that multiple ports (MIF) mode be configured.

The following features are not supported on protected ports:

- Layer 3 interfaces (IP addresses are not supported)
- Mirror or monitor ports
- Private VLAN (PVLAN)
- PVLAN extension to protected-port switches
- Virtual Ethernet (VE) and group VE interfaces

- Loopback interfaces
- Management interfaces
- OpenFlow ports
- Multi-Chassis Trunk (MCT)

Examples

The following example enables protected port on a single interface.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# protected-port
```

The following example enables protected port on multiple ports in MIF mode.

```
device# configure terminal
device(config)# interface ethernet 2/1/1 ethernet 3/1/1
device(config-if-e1000-2/1/1,3/1/1)# protected-port
```

The following example disables protected port for the previous example.

```
device# configure terminal
device(config)# interface ethernet 2/1/1 ethernet 3/1/1
device(config-if-e1000-2/1/1,3/1/1)# no protected-port
```

History

Release version	Command history
08.0.61	This command was introduced.

prune-timer

Configures the time a PIM device maintains a prune state for a forwarding entry.

Syntax

prune-timer *seconds*

no prune-timer *seconds*

Command Default

The prune time is 180 seconds.

Parameters

seconds

Specifies the interval in seconds. The range is 60 through 3600 seconds. The default is 180 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the default prune time, 180 seconds.

The first received multicast interface is forwarded to all other PIM interfaces on the device. If there is no presence of groups on that interface, the leaf node sends a prune message upstream and stores a prune state. This prune state travels up the tree and installs a prune state. A prune state is maintained until the prune timer expires or a graft message is received for the forwarding entry.

Examples

This example configures a PIM prune timer to 90 seconds.

```
Device(config)# router pim
Device(config-pim-router)# prune-timer 90
```

prune-wait

Configures the time a PIM device waits before stopping traffic to neighbor devices that do not want the traffic.

Syntax

prune-wait *seconds*

no prune-wait

Command Default

The prune wait time is 3 seconds.

Parameters

seconds

Specifies the wait time in seconds. The range is 0 through 30 seconds. The default is 3 seconds.

Modes

PIM router configuration mode

Usage Guidelines

A smaller prune wait value reduces flooding of unwanted traffic. A prune wait value of 0 causes the PIM device to stop traffic immediately upon receiving a prune message.

If there are two or more neighbors on the physical port, you should not configure the **prune-wait** command because one neighbor may send a prune message while the other sends a join message at the same time, or within less than 3 seconds.

The **no** form of this command restores the default prune wait time of 3 seconds.

Examples

This example configures the prune wait time to 0 seconds.

```
device(config)# router pim
device(config-pim-router)# prune-wait 0
```

pstat

Starts or stops the collecting of CPU packet statistics.

Syntax

pstat { **start** | **stop** }

Command Default

CPU packet statistics are not collected.

Parameters

start

Starts the collection of CPU packet statistics.

stop

Stops the collection of CPU packet statistics

Modes

Global configuration mode

Usage Guidelines

CPU packet statistics will be collected for the fields specified using the **pstat field-add** command.

Examples

The following example starts the collecting of CPU packet statistics.

```
device# configure terminal
device(config)# pstat field-add l2-dest-mac
device(config)# pstat field-add input-port
device(config)# pstat field-add l2-dest-mac-type
device(config)# pstat max 3
device(config)# pstat start
```

History

Release version	Command history
08.0.90	This command was introduced.

pstat field-add

Specifies the fields for which statistics on the number of packets sent to the CPU will be collected.

Syntax

pstat field-add { **input-port** | **l2-dest-mac** |*l2-dest-mac-type*|**l2-source-mac**}

Command Default

CPU packets statistics are not collected by default.

Parameters

input-port

Collects CPU packet statistics based on the inbound Ethernet port.

l2-dest-mac

Collects CPU packet statistics based on the Layer 2 destination MAC address.

l2-dest-mac-type

Collects CPU packet statistics based on the Layer 2 destination MAC address type: broadcast, unicast, or multicast.

l2-source-mac

Collects CPU packet statistics based on the Layer 2 source MAC address.

Modes

Global configuration mode

Usage Guidelines

The system can be configured to collect statistics on packets destined for the CPU based based on a set of specified fields. The **pstat field-add** command specifies the fields for which packets will be counted.

Examples

```
device# configure terminal
device(config)# pstat field-add l2-dest-mac
device(config)# pstat field-add input-port
device(config)# pstat field-add l2-dest-mac-type
device(config)# pstat max 3
device(config)# pstat start

device(config)# show pstat 11

input-port        l2-dest-mac       l2-dest-mac-type  Count
-----------------------------------------------------------------
mgmt1             0100.5e00.0002    Multicast         19
11/1/7            0180.c200.0000    Multicast         10
2/1/7             0180.c200.000e    Multicast         1
11/1/7            0180.c200.000e    Multicast         1
mgmt1             0180.c200.0000    Multicast         10
mgmt1             cf4e.2445.0400    Multicast         19
mgmt1             778e.f8d4.00c0    Multicast         63
mgmt1             ffff.ffff.ffff    Broadcast         23
-----------------------------------------------------------------

Number of Entries = 8
```

History

Release version	Command history
08.0.90	This command was introduced.

pstat field-delete

Removes the specified fields from the collection of CPU packet statistics.

Syntax

pstat field-delete { **input-port** | **l2-dest-mac** |*l2-dest-mac-type*|**l2-source-mac**}

Command Default

CPU packets statistics are not collected by default.

Parameters

input-port

Specifies that CPU packets based on the inbound Ethernet port will not be counted.

l2-dest-mac

Specifies that CPU packets based on the Layer 2 destination MAC address will not be counted.

l2-dest-mac-type

Specifies that CPU packets based on the Layer 2 destination MAC type will not be counted. Values include broadcast, unicast, or multicast.

l2-source-mac

Specifies that CPU packets based on the Layer 2 source MAC address will not be counted.

Modes

Global configuration mode

Usage Guidelines

The system can be configured to collect statistics on packets destined for the CPU based on a set of specified fields. This command can be used to remove fields from the collection of CPU packet statistics.

Examples

The following command will stop the collection of CPU packet statistics based on input-port.

```
device(config)# pstat field-delete input-port
```

History

Release version	Command history
08.0.90	This command was introduced.

pstat max

Configures the maximum number of fields that will be used in the collection CPU packet statistics.

Syntax

pstat max *number*

Command Default

The default maximum is 4 fields.

Parameters

number

The maximum number of fields to be used for collecting CPU packet statistics. The range is 1 to 4. The default is 4.

Modes

Global configuration mode

Examples

In the following examples, a maximum of three fields will be used for collecting packet statistics.

```
evice(config)# pstat field-add l2-dest-mac
device(config)# pstat field-add input-port
device(config)# pstat field-add l2-dest-mac-type
device(config)# pstat max 3
device(config)# pstat start
```

History

Release version	Command history
08.0.90	This command was introduced.

pstat save

Writes the CPU packet statistics counter entries to flash memory as a text file (pstat.txt), so the file can be transferred to a server for analysis.

Syntax

pstat save

Command Default

The CPU packet statistics counter entries are not saved.

Modes

Global configuration mode

Usage Guidelines

The pstat.txt file is stored in the /fast_iron/ folder.

Examples

The following example shows the configuration of the **pstat save** command:

```
device(config)# pstat save
Writing the keys and counters into flash...
```

History

Release version	Command history
08.0.90	This command was introduced.

ptp-clock transparent

Enables transparent clock (TC) mode for precision time protocol (PTP).

Syntax

ptp-clock transparent pkt-type ethernet option e2e step-type onestep

no ptp-clock transparent pkt-type ethernet option e2e step-type onestep

Command Default

The PTP-TC configuration is disabled by default on all interfaces.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

FastIron 08.0.95 supports the end-to-end PTP-TC mode of operation for standalone and stacking topologies.

The PTP-TC can be enabled globally. All the ports are configured for timestamping after the transparent clock is configured globally.

Enable each port individually if you want to enable or disable timestamping on an individual port or range of ports.

Examples

The following example enables the PTP transparent clock mode globally.

```
device# configure terminal
device(config)# ptp-clock transparent pkt-type ethernet option e2e step-type onestep
PTP Feature Enabled
```

The following example enables the PTP transparent clock mode on individual ports.

```
device# configure terminal
device(config)# interface ethernet 1/1/5
device(config-if-e25000-1/1/5)# ptp-clock transparent pkt-type ethernet option e2e step-type onestep
PTP Feature Enabled on port 1/1/5
```

The following example enables the PTP transparent clock on a range of ports.

```
device(config-if-e25000-1/1/5)# interface ethernet 1/1/10 to 1/1/15
device(config-mif-1/1/10-1/1/15)# ptp-clock transparent pkt-type ethernet option e2e step-type onestep
PTP Feature Enabled on port 1/1/10
PTP Feature Enabled on port 1/1/11
PTP Feature Enabled on port 1/1/12
PTP Feature Enabled on port 1/1/13
PTP Feature Enabled on port 1/1/14
PTP Feature Enabled on port 1/1/15
```

History

Release version	Command history
08.0.95	This command was introduced.

pvlan mapping

Creates a Private VLAN domain with Primary-Secondary pair. Maps promiscuous and host ports to VLAN based forwarding in PVLAN domain.

Syntax

pvlan mapping *vlan-id* [**ethernet** *stackid/slot/port* | **lag** *decimal*]

no pvlan mapping *vlan-id* [**ethernet** *stackid/slot/port* | **lag** *decimal*]

Command Default

PVLAN mapping is not configured.

Parameters

vlan-id
: Secondary VLAN ID to be mapped to Primary.

ethernet *stackid/slot/port*
: Specifies the ethernet interface (stack ID or Slot or port) to which the secondary VLAN is to be mapped.

lag *decimal*
: Specifies the LAG interface (decimal) to which the secondary VLAN is to be mapped.

Modes

VLAN configuration mode

Privileged EXEC

Usage Guidelines

This command will map the secondary VLAN to promiscuous port or LAG. Issue this command only on primary VLAN.Secondary VLAN to be mapped should be VALID.Port or LAG with which secondary VLAN is to be mapped should be a member of Primary VLAN.

The **no** form of the command removes the mapping of Secondary VLAN with promiscuous port or LAG.

Examples

The following example shows how to configure PVLAN mapping on an Ethernet interface.

```
device(config)#lag ISL dynamic id 1
device(config-lag-ISL)# ports ethe 1/2/3 ethe 1/2/4
LAG ISL deployed successfully!
device(config-lag-ISL)#!
device(config-lag-ISL)#lag promiscuous dynamic id 2
device(config-lag-promiscuous)# ports ethe 1/2/1 ethe 1/2/2
LAG promiscuous deployed successfully!
device(config-lag-promiscuous)#!
device(config-lag-promiscuous)#lag wallplate-1 dynamic id 3
device(config-lag-wallplate-1)# ports ethe 1/1/1 to 1/1/4
LAG wallplate-1 deployed successfully!
devoce(config-lag-wallplate-1)#!
device(config-lag-wallplate-1)#lag wallplate-2 dynamic id 4
device(config-lag-wallplate-2)# ports ethe 1/1/5 to 1/1/8
LAG wallplate-2 deployed successfully!
```

History

Release version	Command history
08.0.61	This command was modified to support LAG ID options.
08.0.70	This command was modified to support mapping of secondary VLAN to promiscuous port or LAG.

pvlan pvlan-trunk

Creates a Private VLAN domain with Primary-Secondary pair. Maps ISL and host ports to VLAN based forwarding in PVLAN domain.

Syntax

pvlan pvlan-trunk *num* **ethernet** *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*]...]

no pvlan pvlan-trunk *num* **ethernet** *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*]...]

pvlan pvlan-trunk *num* **lag** *decimal* [**to** *decimal* | [**lag** *decimal* **to** *decimal* | **lag** *decimal*]...]

no pvlan pvlan-trunk *num* **lag** *decimal* [**to** *decimal* | [**lag** *decimal* **to** *decimal* | **lag** *decimal*]...]

Command Default

The inter-switch link for the primary VLAN is not configured.

Parameters

num
Secondary VLAN ID to be mapped to Primary.

ethernet *unit/slot/port*
Specifies the ethernet interface (stack ID or Slot or port) to which the secondary VLAN is to be mapped.

to *unit/slot/port*
Configures a range of Ethernet interfaces as the ISLs.

lag *decimal*
Specifies the LAG interface (decimal) to which the secondary VLAN is to be mapped.

to *decimal*
Configures a set of LAG virtual interfaces as the ISLs.

Modes

VLAN configuration mode

Privileged EXEC mode

Usage Guidelines

Issue this command only on Primary VLAN. Secondary VLAN for which an inter-switch link is to be created should be VALID. Port or LAG on which an inter-switch link is to be created should be a member of Primary VLAN.

The **no** form of the command removes the ISL port or LAG.

Examples

The following example shows on Ethernet interfaces how to identify the ISL in the PVLAN.

```
device(config)# vlan 100
device(config-vlan-100)# tagged ethernet 1/1/10 to 1/1/11
device(config-vlan-100)# untagged ethernet 1/1/4
device(config-vlan-100)# pvlan type primary
device(config-vlan-100)# pvlan mapping 101 ethernet 1/1/4
device(config-vlan-100)# pvlan mapping 102 ethernet 1/1/4
device(config-vlan-100)# pvlan pvlan-trunk 101 ethernet 1/1/10 to 1/1/11
```

History

Release version	Command history
08.0.61	This command was modified to support the LAG ID option.
08.0.70	This command was modified to support mapping of secondary VLAN to promiscuous port or LAG.

pvlan type

Configures the PVLAN as a primary, isolated, or community PVLAN.

Syntax

pvlan type { **community** | **isolated** | **primary** }

no pvlan type { **community** | **isolated** | **primary** }

Command Default

The PVLAN type is not configured.

Parameters

community
Creates a community PVLAN.

isolated
Creates an isolated PVLAN.

primary
Creates a primary PVLAN.

Modes

VLAN configuration mode

Usage Guidelines

The command configures the following PVLAN types:

- Community - Broadcasts and unknown unicasts received on community ports are sent to the primary port and also are flooded to the other ports in the community VLAN.
- Isolated - Broadcasts and unknown unicasts received on isolated ports are sent only to the primary port. They are not flooded to other ports in the isolated VLAN
- Primary - The primary PVLAN ports are "promiscuous". They can communicate with all the isolated PVLAN ports and community PVLAN ports in the isolated and community VLANs that are mapped to the promiscuous port.

For the primary VLAN, map the other PVLANs to the ports in the primary VLAN. VLAN identifiers configured as part of a PVLAN (primary, isolated, or community) should be consistent across the switched network. The same VLAN identifiers cannot be configured as a normal VLAN or a part of any other PVLAN.

LAG ports are not allowed as member ports of an isolated VLAN or community VLAN.

The **no** form of the command disables the PVLAN type.

Examples

The following example shows how to configure the community PVLAN.

```
device(config)# vlan 901
device(config-vlan-901)# untagged ethernet 1/3/5 to 1/3/6
device(config-vlan-901)# pvlan type community
```

The following example shows how to configure a primary PVLAN.

```
device(config)# vlan 7
device(config-vlan-7)# untagged ethernet 1/3/2
device(config-vlan-7)# pvlan type primary
```

History

Release version	Command history
08.0.50	This command was modified so that dual mode PVLANs are supported.

pvst-mode

Enables Per-VLAN Spanning Tree Plus (PVST+) support on a port immediately.

Syntax

pvst-mode

no pvst-mode

Command Default

PVST+ support is automatically enabled when the port receives a PVST BPDU.

Modes

Interface configuration mode

Usage Guidelines

This command cannot be executed concurrently with the **pvstplus-protect** command.

If you disable PVST+ support, the software still automatically enables PVST+ support if the port receives a BPDU with the PVST+ format.

The **no** form of the command disables the PVST+ support.

Examples

The following example shows how to enable the PVST+ mode.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# pvst-mode
```

History

Release version	Command history
08.0.30mb	The **pvstplus-protect** command restriction was added.

pvstplus-protect

Prevents flooding and resulting port blocking on an interface when a Per-VLAN Spanning Tree Plus (PVST+) packet is received on a port configured for Multiple Spanning Tree Protocol (MSTP), blocking the PVST+ Bridge Protocol Data Unit (BPDU) and marking the port as ERR-DISABLED.

Syntax

pvstplus-protect

no pvstplus-protect

Command Default

PVST+ Protect is disabled.

Modes

Interface configuration mode

Usage Guidelines

This command cannot be executed concurrently with the **pvst-mode** command.

When you use the **pvstplus-protect** command, you must also use the global **errdisable recovery pvstplus-protect** command to enable ports to recovery from the error-disabled state.

The **no** form of the command disables PVST+ Protect.

Examples

The following example enables PVST+ Protect on a single port.

```
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# pvstplus-protect
```

The following example enables PVST+ Protect on a range of ports.

```
device(config)# interface ethernet 1/1/1 to 1/1/4
device(config-mif-1/1/1-1/1/4)# pvstplus-protect
```

History

Release version	Command history
08.0.30mb	This command was introduced.

qd-buffer

Configures the port buffers.

Syntax

qd-buffer *device-num buffer-profile queue-depth* [*priority-queue*]

no qd-buffer *device-num buffer-profile quue-depth* [*priority-queue*]

Command Default

Port buffers are not configured.

Parameters

device-num

Specifies the device in the stacking unit. The device number starts from 1.

buffer-profile

Specifies the buffer profile: 1 for 1-Gbps ports, 2 for 10-Gbps ports, and 3 for VoIP ports.

queue-depth

Specifies the number of buffers to allocate.

priority-queue

Specifies the queue of the port. The range is from 0 through 7.

Modes

Global configuration mode

Usage Guidelines

The minimum limit for port buffers is 16. The maximum limit for the port buffer depends on the hardware device.

The **no** form of the command deletes the port buffers.

Examples

The following example configures the port buffers.

```
device(config)# qd-buffer 1 2 76
```

The following example configures the queue buffers.

```
device(config)# qd-buffer 1 2 76 2
```

qd-descriptor

Configures the allowable port descriptors.

Syntax

qd-descriptor *device-num buffer-profile num-of-descriptors* [*priority-queue*]

no qd-descriptor *device-num buffer-profile num-of-descriptors* [*priority-queue*]

Command Default

Port descriptors are not configured.

Parameters

device-num

Specifies the device in the stacking unit. The device number starts from 0.

buffer-profile

Specifies the buffer profile. 1 for 1-Gbps ports and 2 for 10-Gbps ports.

num-of-descriptors

Specifies the number of descriptors to allocate.

priority-queue

Specifies the queue of the port. The range is from 0 through 7.

Modes

Global configuration mode

Usage Guidelines

Port descriptors set the limit for the ports. The minimum limit for port descriptors is 16. The maximum limit of the port descriptors depends on the hardware device. The minimum limit for queue descriptors is 16. The system default queue descriptors are different for different platforms.

The **no** form of the command deletes the port descriptors.

Examples

The following example configures the port descriptors.

```
device(config)# qd-descriptor 1 2 76
```

The following example configures the queue descriptors.

```
device(config)# qd-descriptor 1 2 76 2
```

qos egress-buffer-profile port-share-level

Configures an egress buffer profile for the share port level.

Syntax

qos egress-buffer-profile*user-profile-name***port-share-level***level*

no qos egress-buffer-profile*user-profile-name***port-share-level***level*

Command Default

The default egress buffer profile level is level4-1/9 for 1/9 of the buffers in buffer memory.

Parameters

user-profile-name

Specifies the name of the egress buffer profile to be configured.

level

Specifies the number of buffers that can be used in the buffer memory. The following levels are supported.

TABLE 12 Supported Levels

Level	Sharing-pool buffers
level3-1/16	1/16 of the buffers in buffer memory
level4-1/9	1/9 of the buffers in buffer memory
level5-1/5	1/5 of the buffers in buffer memory
level6-1/3	1/3 of the buffers in buffer memory
level7-1/2	1/2 of the buffers in buffer memory
level8-2/3	2/3 of the buffers in buffer memory

Modes

Global configuration mode

Usage Guidelines

This command is supported only on RUCKUS ICX 8200 devices.

After creating the profile, you can attach it to one or more ports.

You must use the **no egress-buffer-profile** command to detach a profile from any ports that are using it before you can configure the **no qos egress-buffer-profile** command to delete it.

The **no** form of this command resets the egress buffer profile level to its default value of level4-1/9 for 1/9 of the buffers in the buffer memory.

Examples

The following example creates an egress buffer profile named egress2 with a maximum of 1/16 of the buffers in buffer memory.

```
device(config)# qos egress-buffer-profile egress2 port-share-level level3-1/16
```

History

Release version	Command history
08.0.60	This command was introduced.

qos egress-buffer-profile queue-share-level

Configures an egress buffer profile for the share queue level.

Syntax

qos egress-buffer-profile*user-profile-name***queue-share-level***levelqueue-number*

no qos egress-buffer-profile*user-profile-name***queue-share-level***levelqueue-number*

Command Default

The default share level for an egress buffer profile is:

TABLE 13 Default Share Levels

Queue	Share level
0	level4-1/9
1	level3-1/16
2	level3-1/16
3	level3-1/16
4	level3-1/16
5	level3-1/16
6	level3-1/16
7	level3-1/16

The level4-1/9 share level for queue 0 uses 1/9 of the buffers in the sharing pool. The level3-1/16 share level for queue 1 through 7 uses 1/16 of the buffers in the sharing pool for each queue.

Parameters

user-profile-name
Specifies the name of the egress buffer profile to be configured.

queue-share-level*level*
Specifies the number of buffers that can be used in a sharing pool. Eight levels are supported.

queue-number
Specifies the queue to apply the buffer limit to. There are eight hardware queues per port.

Modes

Global configuration mode

Usage Guidelines

This command is not supported for RUCKUS ICX 8200 devices.

The **no** form of this command deletes the egress buffer profile.

You can attach an egress buffer profile to a port.

You must configure the **no egress-buffer-profile** command to detach a profile from any ports that are using it before you can configure the **no qos egress-buffer-profile** command to delete it.

The higher the sharing level, the better the port absorb micro-burst. However, higher-sharing levels of 7 and 8 may compromise QoS functions and create uneven distribution of traffic during periods of congestion.

The following eight queue-share levels are supported:

Level	Sharing-pool buffers
level1-1/64	1/64 of buffers in the sharing pool
level2-1/32	1/32 of buffers in the sharing pool
level3-1/16	1/16 of buffers in the sharing pool
level4-1/9	1/9 of buffers in the sharing pool
level5-1/5	1/5 of buffers in the sharing pool
level6-1/3	1/3 of buffers in the sharing pool
level7-1/2	1/2 of buffers in the sharing pool
level8-2/3	2/3 of buffers in the sharing pool

Examples

The following example creates an egress buffer profile named port-40G.

```
device(config)# qos egress-buffer-profile port-40G queue-share-level
  level1-1/64   1/64 of buffers in the sharing pool
  level2-1/32   1/32 of buffers in the sharing pool
  level3-1/16   1/16 of buffers in the sharing pool
  level4-1/9    1/9 of buffers in the sharing pool
  level5-1/5    1/5 of buffers in the sharing pool
  level6-1/3    1/3 of buffers in the sharing pool
  level7-1/2    1/2 of buffers in the sharing pool
  level8-2/3    2/3 buffers in the sharing pool
```

The following example configures queue 0 on the egress buffer profile named port-40G to use 1/5 of sharing pool.

```
device(config)# qos egress-buffer-profile port-40G port-40G queue-share-level level5-1/5 0
```

The following example configures queue 1 on the egress buffer profile named port-40G to use 1/64 of the sharing pool.

```
device(config)# qos egress-buffer-profile port-40G port-40G queue-share-level level1-1/64 1
```

The following example attaches the egress buffer profile named port-40G to ports 1/2/1 to 1/2/6.

```
device(config)# interface ethernet 1/2/1 to 1/2/6
device(config-mif-1/2/1-1/2/6)#egress-buffer-profile port-40G
device(config-mif-1/2/1-1/2/6)#end
```

The following example shows the error if you try to delete a profile that is attached to a port.

```
device(config)# no qos egress-buffer-profile port-40G
Error - Egress Profile port-40G is active on Port 1/2/1. It must be deactivated from port before
deleting.
```

The following example detaches the egress buffer profile named port-40G from ports 1/2/1 to 1/2/6 and then delete the profile.

```
device(config)# interface ethernet 1/2/1 to 1/2/6
device(config-mif-1/2/1-1/2/6)# no egress-buffer-profile port-40G
device(config-mif-1/2/1-1/2/6)#exit
device(config)# no qos egress-buffer-profile port-40G
```

History

Release version	Command history
08.0.10	This command was introduced.

qos egress-shape-ifg-bytes

Configures egress shaper IFG bytes.

Syntax

qos egress-shape-ifg-bytes*value-in-bytes*

no qos egress-shape-ifg-bytes*value-in-bytes*

Command Default

By default, a value of 20 bytes is configured.

Parameters

value-in-bytes

Specifies the number of preamble and IFG bytes to be added to egress shaping in the range 1 through 127.

Modes

Global configuration mode

Usage Guidelines

This command is supported on RUCKUS ICX 7650 devices only.

It is recommend to use a value greater than or equal to 20 bytes.

The **no** form of the command restores the default value of 20.

Examples

The following example configures an egress shaper IFG bytes value of 25.

```
device# configure terminal
device(config)# qos egress-shaper-ifg-bytes 25
```

The following example restores the default egress shaper IFG bytes value of 20.

```
device# configure termnial
device(config)# no qos egress-shaper-ifg-bytes 25
```

qos mechanism

Configures the Quality of Service (QoS) queuing method.

Syntax

qos mechanism { **strict** | **weighted** | **mixed-sp-wrr** }

no qos mechanism { **strict** | **weighted** | **mixed-sp-wrr** }

Command Default

By default, devices use the Weighted Round Robin (WRR) method of packet prioritization. WRR ensures that all queues are serviced during each cycle

Parameters

strict

Changes the method to strict order scheduling (Strict Priority (SP)).

weighted

Changes the method to weighted scheduling (WRR).

mixed-sp-wrr

Changes the method to both strict scheduling and weighted scheduling.

Modes

Global configuration mode

Usage Guidelines

By default, when you select the combined Strict Priority (SP) and WRR queueing method, the device assigns strict priority to traffic in qosp6 and qosp7 and weighted round robin priority to traffic in qosp0 through qosp5.

The **no** form of the command configures the device to use the WRR method of packet prioritization.

Examples

The following example shows changes the method to strict priority scheduling.

```
device(config)# qos mechanism strict
```

qos name

Renames the queue.

Syntax

qos name *old-name new-name*

Command Default

The default queue names are qosp7, qosp6, qosp5, qosp4, qosp3, qosp2, qosp1, and qosp0.

Parameters

old-name

Specifies the name of the queue before the change.

new-name

Specifies the new name of the queue. The name can be an alphanumeric string up to 32 characters long.

Modes

Global configuration mode

Examples

The following example renames the queue qosp3 to 92-octane.

```
device(config)# qos name qosp3 92-octane
```

qos priority-to-pg

Configures priority-to-priority-group (PG) mapping for priority flow control (PFC).

Syntax

qos priority-to-pgqosp0*priority-PG-map***qosp1***priority-PG-map***qosp2***priority-PG-map***qosp3***priority-PG-map***qosp4***priority-PG-map***qosp5***priority-PG-map***qosp6***priority-PG-map***qosp7***priority-PG-map*

no qos priority-to-pg

Command Default

Priority-to-PG mapping is not configured.

Parameters

qosp0 through **qosp7**
Configures the internal priority based on classification in the range 0 through 7.

priority-PG-map
Specifies the internal priority-to-PG mapping. The range is from 0 through 3.

Modes

Global configuration mode

Usage Guidelines

This command is not supported for RUCKUS ICX 8200 or ICX 7650 devices.

You must configure the **priority-flow-control enable** command to enable PFC globally before you configure priority-to-PG mapping.

NOTE
Default mapping, mapping priorities, and mapping restrictions changed in FastIron Release 08.0.20. The following restrictions apply:

- Priority 7, and only Priority 7, is always mapped to PG4.
- PG4 is always lossy.
- PFC cannot be enabled on PG4.
- Priorities 0 through 5 can be mapped to PG0, PG1, and PG2. They cannot be mapped to PG3 or PG4.

The default values of priority-to-PG maps:

- QoS internal priority 0 is mapped to PG 0
- QoS internal priority 1 is mapped to PG 0
- QoS internal priority 2 is mapped to PG 1
- QoS internal priority 3 is mapped to PG 1
- QoS internal priority 4 is mapped to PG 1

- QoS internal priority 5 is mapped to PG 2
- QoS internal priority 6 is mapped to PG 2
- QoS internal priority 7 is mapped to PG 4

The default values of priority-to-PG maps in releases prior to Release 08.0.20:

- QoS internal priority 0 is mapped to PG 0
- QoS internal priority 1 is mapped to PG 0
- QoS internal priority 2 is mapped to PG 1
- QoS internal priority 3 is mapped to PG 1
- QoS internal priority 4 is mapped to PG 1
- QoS internal priority 5 is mapped to PG 2
- QoS internal priority 6 is mapped to PG 2
- QoS internal priority 7 is mapped to PG 2

In releases prior to Release 08.0.20, you can map QoS internal priority 7 to PG 3. You can also map any other priority to PG 3 if it meets the following requirements:

- Lower priorities are mapped to lower PGs.
- PGs are configured in ascending order.
- Multiple priorities in a single PG must be consecutive.

Priority-to-PG mapping is not configurable in other modes. Symmetrical and asymmetrical 802.3x flow control modes have their own default priority-to-PG mapping.

You must configure PGs in ascending order, 0 to 3. You can configure a higher-order PG only if all the lower-order PGs have some mapped priorities.

The **no** form of the command restores the default priority-to-PG map.

Examples

The following example configures a priority-to-PG map.

```
Device(config)# priority-flow-control enable
Device(config)# qos priority-to-pg qosp0 0 qosp1 1 qosp2 1 qosp3 1 qosp4 2 qosp5 2 qosp6 2 qosp7 4
```

The following example restores the default priority-to-PG map.

```
Device(config)# no qos priority-to-pg qosp0 0 qosp1 1 qosp2 1 qosp3 1 qosp4 2 qosp5 2 qosp6 2 qosp7 4
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.20	This command was modified to change priority 7-to-PG4 mapping and mapping restrictions for priorities 0 through 5.

qos profile

Changes the minimum bandwidth percentages of the eight Weighted Round Robin (WRR) queues.

Syntax

qos profile { *name7* { **sp** | *percentage* } ... *name0* { **sp** | *percentage* }

no qos profile { *name7* { **sp** | *percentage* } ... *name0* { **sp** | *percentage* }

Command Default

The eight QoS queues on FastIron devices receive the minimum guaranteed percentages of a port's total bandwidth, as shown in the following table. Note that the defaults differ when jumbo frames are enabled.

Parameters

name

Specifies the name of a queue. You can specify the queues in any order on the command line, *but you must specify each queue*.

sp

Changes the method to strict priority scheduling.

percentage

Specifies the percentage of the device outbound bandwidth that is allocated to the queue. QoS queues require a minimum bandwidth percentage of 3 percent for each priority. When jumbo frames are enabled, the minimum bandwidth requirement is 8 percent. If these minimum values are not met, QoS may not be accurate.

Modes

Global configuration mode

Usage Guidelines

When the queuing method is WRR, the software internally translates the percentages into weights. The weight associated with each queue controls how many packets are processed at a given stage through the weighted round robin algorithm.

TABLE 14 Default Minimum Bandwidth Percentages

Queue	Default minimum percentage of bandwidth	
	Without jumbo frames	With jumbo frames
qosp7	75%	44%
qosp6	7%	8%
qosp5	3%	8%
qosp4	3%	8%
qosp3	3%	8%
qosp2	3%	8%
qosp1	3%	8%

TABLE 14 Default Minimum Bandwidth Percentages (continued)

Queue	Default minimum percentage of bandwidth	
qosp0	3%	8%

The **no** form of the command restores the default bandwidth percentages.

Examples

The following example changes the bandwidth percentages for the queues.

```
device(config)# qos profile qosp7 25 qosp6 15 qosp5 12 qosp4 12 qosp3 10 qosp2
10 qosp1 10 qosp0 6

Profile qosp7 : Priority7 bandwidth requested 25% calculated 25%
Profile qosp6 : Priority6 bandwidth requested 15% calculated 15%
Profile qosp5 : Priority5 bandwidth requested 12% calculated 12%
Profile qosp4 : Priority4 bandwidth requested 12% calculated 12%
Profile qosp3 : Priority3 bandwidth requested 10% calculated 10%
Profile qosp2 : Priority2 bandwidth requested 10% calculated 10%
Profile qosp1 : Priority1 bandwidth requested 10% calculated 10%
Profile qosp0 : Priority0 bandwidth requested 6% calculated 6%
```

qos scheduler-profile

Configures a user-defined Quality of Service (QoS) scheduler profile.

Syntax

qos scheduler-profile *user-profile-name* { **mechanism** *scheduling-mechanism* | **profile** [**qosp0** *wt0* | **qosp1** *wt1* | **qosp2** *wt2* | **qosp3** *wt3* | **qosp4** *wt4* | **qosp5** *wt5* | **qosp6** *wt6* | **qosp7** *wt7*] }

no qos scheduler-profile *user-profile-name*

Command Default

A user-defined QoS scheduler profile is not configured.

Parameters

user-profile-name

Specifies the name of the scheduler profile to be configured.

mechanism*scheduling-mechanism*

Configures the queue assignment with the specified scheduling mechanism. The following scheduling mechanisms are supported:

mixed-sp-wrr

Specifies mixed strict-priority (SP) and weighted scheduling.

strict

Specifies SP scheduling.

weighted

Specifies weighted scheduling.

profile qosp0-7

Configures the profile based on classification in the range 0 through 7.

wt0-7

Specifies the bandwidth percentage for the corresponding QoS profile. The range is from 0 through 7.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command removes the scheduler profile configuration.

You can use the **scheduler-profile** command to attach a user scheduler profile to a port. If you want to remove a scheduler-profile you must ensure that it is not attached to any port.

The default QoS-profile weights for each queue using a weighted QoS mechanism are as follows:

Profile	Priority	Weighted bandwidth
Profile qosp7	Priority7(Highest)	Bandwidth requested 44% calculated 44%
Profile qosp6	Priority6	Bandwidth requested 8% calculated 8%
Profile qosp5	Priority5	Bandwidth requested 8% calculated 8%
Profile qosp4	Priority4	Bandwidth requested 8% calculated 8%
Profile qosp3	Priority3	Bandwidth requested 8% calculated 8%
Profile qos2	Priority2	Bandwidth requested 8% calculated 8%
Profile qosp1	Priority1	Bandwidth requested 8% calculated 8%
Profile qosp0	Priority0 (Lowest)	Bandwidth requested 8% calculated 8%

Per-queue details	Bandwidth percentage
Class 0	3
Class 1	3
Class 2	3
Class 3	3
Class 4	3
Class 5	3
Class 6	7
Class 7	75

The default QoS-profile weights for each queue using a mixed QoS mechanism are as follows:

Per-queue details	Bandwidth percentage
Class 0	15
Class 1	15
Class 2	15
Class 3	15
Class 4	15
Class 5	25
Class 6	sp
Class 7	sp

The total weight (wt0-wt7) in both weighted and mixed mechanism must be 100 percent.

The minimum value for any weight is 1.

A maximum of eight scheduler profiles are supported.

Examples

The following example configures a QoS scheduler profile named user1, with weighted scheduling, and specify the bandwidth percentage for each QoS class:.

```
device# configure terminal
device(config)# qos scheduler-profile user1 mechanism weighted
device(config)# qos scheduler-profile user1 profile qosp0 1 qosp1 1 qosp2 10 qosp3 10 qosp4 10 qosp5 10
qosp6 20 qosp7 38
```

The following example configures a QoS scheduler profile named user2, with SP scheduling.

```
device# configure terminal
device(config)# qos scheduler-profile user2 mechanism strict
```

The following example configures a QoS scheduler profile named user3, with mixed SP and weighted scheduling.

```
device# configure terminal
device(config)# qos scheduler-profile user3 mechanism mixed-sp-wrr
```

The following example removes a QoS scheduler profile named user3.

```
device# configure terminal
device(config)# no qos scheduler-profile user3
```

History

Release version	Command history
08.0.10	This command was introduced.

qos sflow-set-cpu-rate-limit

Sets the CPU rate limit for sFlow.

Syntax

qos sflow-set-cpu-rate-limit *packet-rate burst-size*

no qos sflow-set-cpu-rate-limit *packet-rate burst-size*

Command Default

A CPU rate limit for sFlow is configured with the default values of 100 sFlow sampled packets per second (PPS) and a burst size of 5000 B.

Parameters

packet-rate

Specifies the number of sFlow sampled PPS into the CPU. The value is measured in PPS and ranges from 1 to 1000.

burst-size

Specifies the burst size. The value is measured in bytes and ranges from 1 to 99999.

Modes

Global configuration mode

Usage Guidelines

If the burst size is set low more packets are subject to rate limiting. If the burst size is set too high fewer packets are subject to rate limiting.

You should not set the burst size less than 10 times the maximum transmission unit of the traffic.

The recommended settings are 1000 PPS with a maximum burst size of 5000 B.

The **no** form of this command returns the device to the default CPU rate limit for sFlow.

Examples

The following example uses the recommended settings to configure the CPU rate limit for sFlow.

```
device(config)# qos sflow-set-cpu-rate-limit 1000 5000
```

To view the CPU rate limit for sFlow use the following command.

```
device(config)# show qos sflow-rate-limit
Queue-Num       Rate-Limt       Burst-Size
Queue13           1000            5000
device(config)#
```

History

Release version	Command history
08.0.40	This command was introduced.

qos tagged-priority

Changes the VLAN priority of 802.1p to hardware forwarding queue mappings.

Syntax

qos tagged-priority *num queue*

no qos tagged-priority *num queue*

Parameters

num

Specifies the VLAN priority. The value can range from 0 to 7.

queue

Specifies the hardware forwarding queue on which you are reassigning the priority. The default queue names are as follows: qosp7, qosp6, qosp5, qosp4, qosp3, qosp2, qosp1, qosp0.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command sets the VLAN priority to 802.1p.

Examples

The following example maps VLAN priority 2 to hardware forwarding queue qosp0.

```
device(config)# qos tagged-priority 2 qosp0
```

qos-tos map dscp-priority

Changes the ifferentiated Services Code Point (DSCP)-to-internal-forwarding-priority mappings.

Syntax

qos-tos map dscp-priority *dscp-value1* [...*dscp-value8*] **to** *priority*

no qos-tos map dscp-priority *dscp-value1* [...*dscp-value8*] **to** *priority*

Parameters

dscp-value

Specifies the DSCP value ranges that you are remapping. You can map up to eight DSCP values to the same forwarding priority in the same command.

to

Configures the DSCP value to the new internal forwarding priority.

priority

Specifies the internal forwarding priority.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command restores the default value.

TABLE 15 Default DSCP-to-Internal-Forwarding-Priority Mappings

Internal forwarding priority	DSCP value
0 [lowest priority queue]	0–7
1	8–15
2	16–23
3	24–31
4	32–39
5	40–47
6	48–55
7 [highest priority queue]	56–63

DSCP values range from 0 through 63, whereas the internal forwarding priority values range from 0 through 7. Any DSCP value within a given range is mapped to the same internal forwarding priority value. For example, any DSCP value from 8 through 15 maps to priority 1.

Examples

The following example changes the DSCP-to-internal-forwarding-priority mappings.

```
device(config)# qos-tos map dscp-priority 0 2 3 4 to 1
```

radius-client coa host

Configures the key to be used between the Change of Authorization (CoA) client and FastIron device.

Syntax

radius-client coa host { *addr* | *name* | **ipv6** *ipv6_address* } { **key** *key-string* }

no radius-client coa host { *addr* | *name* | **ipv6** *ipv6_address* } { **key** *key-string* }

Command Default

No key is configured between the CoA client and device.

Parameters

addr
IPv4 address of the CoA host.

name
Name of the CoA host.

ipv6 *ipv6_address*
IPv6 address of the CoA host.

key *key-string*
The key required to be used between the CoA client and FastIron device.

Modes

Global configuration mode

Usage Guidelines

RADIUS Change of Authorization (CoA) messages from clients configured through this command will be processed. CoA messages from unconfigured clients will be discarded.

The **no** form of the command removes the specific CoA client from the configuration and clears the CoA sessions associated with the specific CoA client.

Examples

The following example configures the key to be used between the CoA host and the device.

```
device# configure terminal
device(config)# radius-client coa host 10.21.240.46 key fastiron123
```

History

Release version	Command history
08.0.20	This command was introduced.

radius-client coa port

Changes the default CoA (Change of Authorization) port number.

Syntax

radius-client coa port *udp-port-number*

no radius-client coa port *udp-port-number*

Command Default

The CoA port number is 3799.

Parameters

udp-port-number
The number of the UDP port.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command restores the default port number (3799).

Examples

The following example changes the CoA port number to 3000.

```
device(config)# radius-client coa port 3000
```

History

Release version	Command history
08.0.20	This command was introduced.

radius-server accounting

Configures to send interim updates of accounting messages to the RADIUS server at regular intervals..

Syntax

radius-server accounting { **interim-updates** | **interim-interval** *value*}

no radius-server accounting { **interim-updates** | **interim-interval** *value*}

Command Default

Accounting updates are disabled. The default interim interval is zero.

Parameters

interim-updates
Enables the interim accounting updates.

interim-interval *value*
Sets the interval between each interim update. Default value is 0. The range of valid values is from 5 through 1440 minutes.

Modes

Global configuration mode

Usage Guidelines

The RADIUS accounting for 802.1X authentication and MAC authentication accepts either the interim update interval value configured using the RADIUS attribute or the interval time value set on the device, whichever is higher.

The **no** form of the command resets the feature to the default values.

Examples

The following example enables interim updates and set accounting update intervals for 802.1X authentication accounting and MAC authentication accounting as 10 minutes.

```
device# configure terminal
device(config)# radius-server accounting interim-updates
device(config)# radius-server accounting interim-interval 10
```

History

Release version	Command history
08.0.50	This command was introduced.

radius-server dead-time

Configures the interval at which the test user message is sent to the server to check the status of non-responding servers that are marked as dead.

Syntax

radius-server dead-time *time*

no radius-server dead-time *time*

Command Default

RADIUS dead time is not enabled.

Parameters

time

The time interval between successive server requests to check the availability of the RADIUS server in minutes. The valid values are from 1 through 5 minutes.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the dead time interval.

Examples

The following example configures the RADIUS server dead time as four minutes.

```
device(config)# radius-server deadtime 4
```

radius-server host

Configures the Remote Authentication Dial-In User Service (RADIUS) server.

Syntax

radius-server host{*ipv4-address*|*host-name*|*ipv6-address*}[**auth-port***port-num*[**acct-port***port-num*[{**accounting-only**|**authentication-only**|**default**}[**ssl-auth-port***port-num*[**accounting-only**|**authentication-only**|**default**|**profile***profile_name*][**key***key-string*[**dot1x**|**mac-auth**|**no-login**|**web-auth**][**port-only**]]]]]

no radius-server host{*ipv4-address*|*host-name*|*ipv6-address*}[**auth-port***port-num*[**acct-port***port-num*[{**accounting-only**|**authentication-only**|**default**}[**ssl-auth-port***port-num*[**accounting-only**|**authentication-only**|**default**|**profile***profile_name*][**key***key-string*[**dot1x**|**mac-auth**|**no-login**|**web-auth**][**port-only**]]]]]

Command Default

The RADIUS server host is not configured.

Parameters

ipv4-address
: Configures the IPv4 address of the RADIUS server.

host-name
: Configures the host name of the RADIUS server.

ipv6-address
: Configures the IPv6 address of the RADIUS server.

auth-port*port-num*
: Configures the authentication UDP port. The default value is 1812.

acct-port*port-num*
: Configures the accounting UDP port. The default value is 1813.

accounting-only
: Configures the server to be used only for accounting.

authentication-only
: Configures the server to be used only for authentication.

default
: Configures the server to be used for any AAA operation.

profile*profile_name*
: Applies a previously configured authentication profile to an SSL authentication port.

ssl-auth-port*port-num*
: Specifies that the server is a RADIUS server running over a TLS-encrypted TCP session. Only one of **auth-port** or **ssl-auth-port** can be specified. If neither is specified, it defaults to the existing default behavior, which uses the default auth-port of 1812 and 1813 for accounting with no TLS encryption. The default destination port number for RADIUS over TLS is TCP/2083.There are no separate ports for authentication, accounting, and dynamic authorization changes. The source port is arbitrary. TLS-encrypted sessions support both IPv4 and IPv6.

accounting-only
Configures the server to be used only for accounting.

authentication-only
Configures the server to be used only for authentication.

default
Configures the server to be used for any AAA operation.

key*key-string*
Configures the RADIUS key for the server.

dot1x
Configures support for EAP for 802.1X authentication.

mac-auth
Configures the server to be used only for MAC authentication.

no-login
Configures the server not to be used for Telnet, SSH, console, EXEC, or Web-management AAA.

web-auth
Configures the server to be used only for Web authentication.

port-only
Specifies that the server will be used only to authenticate users on ports to which it is mapped.

Modes

Global configuration mode

Usage Guidelines

Use this command to identify a RADIUS server to authenticate access to a RUCKUS device. You can specify up to eight servers. If you add multiple RADIUS authentication servers to the RUCKUS device, the device tries to reach them in the order you add them. To use a RADIUS server to authenticate access to a RUCKUS device, you must identify the server to the RUCKUS device. In a RADIUS configuration, you can designate a server to handle a specific AAA task. For example, you can designate one RADIUS server to handle authorization and another RADIUS server to handle accounting. You can specify individual servers for authentication and accounting, but not for authorization. You can set the RADIUS key for each server.

TLS-encrypted TCP sessions are not supported by management VRF.

The **radius-server host** command and the **radius-server key** command must be entered on the same command line to configure the ICX device to authenticate end devices through 802.1x or MAC authentication.

The **no** form of the command removes the RADIUS sever host configuration.

Examples

The following example configures non-default UDP ports for authorization and accounting.

```
device(config)# radius-server host 1.2.3.4 auth-port 100 acct-port 200
device(config)# show aaa
***** TACACS server not configured
Radius default key: ...
Radius retries: 3
Radius timeout: 3 seconds
Radius Server:          IP=172.26.67.12 SSL Port=2083 Usage=any
                    Key=...
                    opens=0 closes=0 timeouts=0 errors=0
                    packets in=0 packets out=0
                    IPv4 Radius Source address: IP=0.0.0.0              IPv6 Radius Source
Address:           IP=::
Radius Server:          IP=1.2.3.4 Auth Port=100 Acct Port=200 Usage=any
                    Key=...
                    opens=0 closes=0 timeouts=0 errors=0
                    packets in=0 packets out=0
                    IPv4 Radius Source address: IP=0.0.0.0              IPv6 Radius Source
Address:           IP=::
```

The following example shows how to specify different RADIUS servers for authentication and accounting.

```
device(config)# radius-server host 10.2.3.4 auth-port 1800 acct-port 1850 default key abc
device(config)# radius-server host 10.2.3.5 auth-port 1800 acct-port 1850 authentication-only key def
device(config)# radius-server host 10.2.3.6 auth-port 1800 acct-port 1850 accounting-only key ghi
```

The following example shows how to map the 802.1X port to a RADIUS server.

```
device(config)# radius-server host 10.2.3.4 auth-port 1800 acct-port 1850 default key abc dot1x
```

The following example shows how to configure a RADIUS server for TLS support.

```
device(config)# radius-server host 172.26.67.12 ssl-auth-port 2083 default key whatever
device(config)# show aaa
***** TACACS server not configured
Radius default key: ...
Radius retries: 3
Radius timeout: 3 seconds
Radius Server:          IP=172.26.67.12 SSL Port=2083 Usage=any
                    Key=...
                    opens=0 closes=0 timeouts=0 errors=0
                    packets in=0 packets out=0
                    IPv4 Radius Source address: IP=0.0.0.0              IPv6 Radius Source
Address:           IP=::
```

The following example configures the RADIUS server to be used for both MAC authentication and login features.

```
device# configure terminal
device(config)# radius-server host 10.26.67.13 auth-port 1812 acct-port 1813 default key ruckus mac-auth
```

The following example uses the RADIUS server for Flexible authentication modules and login features.

```
device# configure terminal
device(config)# radius-server host 10.26.67.13 auth-port 1812 acct-port 1813 default key ruckus mac-
auth dot1x
```

The following example uses the RADIUS server for Flexible authentication and excludes the use of the server for login features.

```
device# configure terminal
device(config)# radius-server host 10.26.67.13 auth-port 1812 acct-port 1813 default key ruckus mac-
auth dot1x no-login
```

The following example shows the default profile available in TPM devices (not user configured).

```
radius-server host 10.177.131.182 ssl-auth-port 2083 profile DEVICE_PROFILE default key 123qwe dot1x
mac-auth web-auth
```

The following example configures a TLS-encrypted session for the RADIUS server. It uses the pre-configured SSL profile "tls-profile." An SSL profile is required for establishing an encrypted TLS session.

```
device(config)# radius-server host 10.177.131.182 ssl-auth-port 2083 profile tls-profile default key
radsec dot1x mac-auth web-auth
```

History

Release version	Command history
08.0.50	This command was updated with the **mac-auth** and **web-auth** options.
08.0.80	This command was modified to add the **no-login** option.

radius-server key

Configures the value that the device sends to the RADIUS server when trying to authenticate user access.

Syntax

radius-server key *key-string*

no radius-server key *key-string*

Command Default

The RADIUS server key is not configured.

Parameters

key-string

Specifies the key as an ASCII string. The value for the key parameter on the device should match the one configured on the RADIUS server. The key can be from 1 through 64 characters in length and cannot include any space characters.

Modes

Global configuration mode

Usage Guidelines

The **radius-server key** command is used to encrypt RADIUS packets before they are sent over the network.

The **no** form of the command removes the RADIUS server key configuration.

The **radius-server host** command and the **radius-server key** command must be entered on the same command line to configure the ICX device to authenticate end devices through 802.1x or MAC authentication.

Examples

The following example configures a RADIUS server key for a RADIUS server that will handle 802.1x authentication.

```
device# configure terminal
device(config)# radius-server host 10.2.3.4 auth-port 1800 acct-port 1850 default key abc dot1x
```

radius-server retransmit

Configures the maximum number of retransmission attempts for a request when a RADIUS authentication request times out.

Syntax

radius-server retransmit *number*

no radius-server retransmit *number*

Command Default

The default retransmit number is three retries.

Parameters

number

The maximum number of retries the RUCKUS software retransmits the request. The valid values are from 1 through 5. The default is 2.

Modes

Global configuration mode

Usage Guidelines

When an authentication request times out, the RUCKUS software retransmits the request up to the maximum number of retransmission tries configured.

From FastIron 09.0.10b, this command is not available when TLS is configured for RADIUS server connections because retransmissions are not required for TLS.

The **no** form of the command removes the configuration.

Examples

The following example shows how to set the retransmission number to 4.

```
device(config)# radius-server retransmit 4
```

History

Release version	Command history
09.0.10b	The command is disabled when TLS is configured for RADIUS server connections.

radius-server test

Sets the user name to be used in the RADIUS request packets for RADIUS dead server detection.

Syntax

radius-server test *user-name*

no radius-server test

Command Default

There is no user name configured.

Parameters

user-name

The false user name used in the server test.

Modes

Global configuration mode

Usage Guidelines

The username should not be configured on the server, so that the server responds with Access-Reject message if the server is available.

If the device does not receive a response from a RADIUS server within a specified time limit and number of retries, the RADIUS server is marked as dead. The time limit and number of retries can be manually configured using the **radius-server timeout** and **radius-server retransmit** commands respectively.

The **no** form of the command disables the configuration to send RADIUS request packets with false usernames for RADIUS dead server detection.

Examples

The following example configures the user name as 'test-user' to test the availability of the server.

```
device# configure terminal
device(config)# radius-server test test-user
```

History

Release version	Command history
08.0.50	This command was introduced.

radius-server timeout

Configures the number of seconds the device waits for a response from a RADIUS server before either retrying the authentication request, or determining that the RADIUS servers are unavailable and moving on to the next authentication method in the authentication method list.

Syntax

radius-server timeout *time*

no radius-server timeout *time*

Command Default

The default timeout value is 3 seconds.

Parameters

time

The timeout value in seconds. Valid values are from 1 through 15 seconds. The default is 3 seconds.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command sets the timeout value to the default.

Examples

The following example shows how to set the RADIUS server timeout value to 10 seconds.

```
device(config)# radius-server timeout 10
```

raguard

Configures the current interface as a trusted, untrusted, or host Router Advertisement (RA) guard port.

Syntax

raguard { **trust** | **untrust** | **host** }

no raguard { **trust** | **untrust** | **host** }

Parameters

trust
Configures an interface as a trusted RA guard port.

untrust
Configures an interface as an untrusted RA guard port.

host
Configures an interface as a host RA guard port.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command removes the current trusted or untrusted configuration.

A trusted RA guard port forwards all the receive RA packets without inspecting. An untrusted port inspects the received RAs against the RA guard policy's whitelist, prefix list and preference maximum settings before forwarding the RA packets. If an RA guard policy is not configured on an untrusted or host port, all the RA packets are forwarded.

Examples

The following example configures an interface as a trusted RA guard port:

```
device(config)# interface ethernet1/1/1
device(config-int-e1000-1/1/1)# raguard trust
```

The following example configures an interface as an untrusted RA guard port:

```
device(config)# interface ethernet1/2/1
device(config-int-e1000-1/2/1)# raguard untrust
```

The following example configures an interface as a host RA guard port:

```
device(config)# interface ethernet3/2/1
device(config-int-e1000-3/2/1)# raguard host
```

range6 (DHCPv6)

Specifies a range of IPv6 prefixes for a subnet for a DHCPv6 server.

Syntax

range6 *ipv6-address1 lower-range ipv6-address2 upper-range*

range6 *ipv6-prefix*

Command Default

No range of IPv6 addresses or IPv6 prefixes is specified.

Parameters

ipv6-address1 lower-range ipv6-address2 upper-range
Assigns IPv6 addresses in the specified range.

ipv6-prefix
Assigns an IPv6 address in the specified prefix.

Modes

DHCPv6 subnet configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the “Software Upgrade and Downgrade” chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The **no** form of the command removes a configured range of IPv6 addresses or IPv6 prefixes.

Examples

The following example specifies a range of IPv6 addresses for a subnet configured for the DHCP6 server.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# subnet6 3ffe:501:ffff:100::/64
device(config-dhcpv6-subnet)# range6 3ffe:501:ffff:100::10 3ffe:501:ffff:100::20
```

History

Release version	Command history
08.0.90	This command was introduced.

rapid-commit (DHCPv6)

Configures the DHCPv6 Rapid Commit option (DHCPv6 option 14) for the DHCPv6 server for faster IPv6 prefix delegation.

Syntax

rapid-commit

no rapid-commit

Command Default

The DHCPv6 Rapid Commit option is not configured.

Modes

DHCPv6 server configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the “Software Upgrade and Downgrade” chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The **no** form of the command restores the default.

Examples

The following example configures the Rapid Commit option for the DHCPv6 server.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# rapid-commit
```

History

Release version	Command history
08.0.90	This command was introduced.

rarp

Assigns a static IP RARP entry for static routes.

Syntax

rarp *index mac-address ip-address*

no rarp *index mac-address ip-address*

Command Default

RARP entry is not configured.

Parameters

index

Specifies the static IP RARP entry's index. You can specify an unused number from 1 to the maximum number of RARP entries supported on the device.

mac-address

Specifies the static IP RARP entry's MAC address.

ip-address

Specifies the static IP RARP entry's IP address.

Modes

Global configuration mode

Usage Guidelines

You must configure the RARP entries for the RARP table. The Layer 3 switch can send an IP address in reply to a client RARP request only if create a RARP entry for that client.

The **no** form of the command removes the static IP RARP entry.

Examples

The following example creates a RARP entry for a client with MAC address 0000.0054.2348. When the Layer 3 switch receives a RARP request from this client, the Layer 3 switch replies to the request by sending IP address 192.53.4.2 to the client.

```
device(config)# rarp 1 0000.0054.2348 192.53.4.2
```

rate-limit-arp

Limits the number of ARP packets the RUCKUS device accepts during each second.

Syntax

rate-limit-arp *number*

no rate-limit-arp *number*

Command Default

ARP rate limiting is not enabled.

Parameters

number

Specifies the number of ARP packets and can be from 0 through 100. If you specify 0, the device will not accept any ARP packets.

Modes

Global configuration mode

Usage Guidelines

To prevent the CPU from becoming flooded by ARP packets in a busy network, you can restrict the number of ARP packets the device will accept each second. When you configure an ARP rate limit, the device accepts up to the maximum number of packets you specify, but drops additional ARP packets received during the one-second interval. When a new one-second interval starts, the counter restarts at zero, so the device again accepts up to the maximum number of ARP packets you specified, but drops additional packets received within the interval.

NOTE
If you want to change a previously configured the ARP rate limiting policy, you must remove the previously configured policy using the no rate-limit-arp command before entering the new policy.

The **no** form of the command disables ARP rate limiting.

Examples

The following example configures the device to accept up to 100 ARP packets each second.

```
device(config)# rate-limit-arp 100
```

rate-limit input

Configures a port-based rate-limiting policy.

Syntax

rate-limit input fixed *average-rate* [**burst** *burst-size*]

no rate-limit input fixed *average-rate* [**burst** *burst-size*]

rate-limit input fixed ethe *stack/slot /port average-rate*

no rate-limit input fixed ethe *stack/slot /port average-rate*

Parameters

fixed

Configures fixed rate-limiting policy.

average-rate

Specifies the maximum number of kilobits per second (kbps).

burst *burst-size*

Specifies the burst size in kilobits.

Modes

Interface configuration mode

LAG configuration mode

Usage Guidelines

The **no** form of the command removes rate limiting.

Examples

The following example configures rate limiting on a port.

```
device(config)# interface ethernet 1/1/2
device(config-if-e1000-1/1/2)# rate-limit input fixed 500
```

rate-limit output

Configures the maximum rate at which outbound traffic is sent on a port priority queue or on a LAG port.

Syntax

rate-limit output shaping *value* [**priority** *priority-queue*]

no rate-limit output shaping *value* [**priority** *priority-queue*]

rate-limit output shaping ethe *stack/slot/port value* [**priority** *priority-queue*]

no rate-limit output shaping ethe *stack/slot/port value* [**priority** *priority-queue*]

Parameters

shaping *value*

Specifies the rate-shaping limit.

ethernet *stackislot/port*

Specifies the Ethernet port.

priority *priority-queue*

Specifies a rate-shaping priority. The value can range from 0 to 7.

Modes

Interface configuration mode

LAG configuration mode

Usage Guidelines

The **no** form of the command removes the output rate shaping.

Examples

The following example configures the maximum rate at which outbound traffic is sent on a port priority queue

```
device(config)# interface ethernet 1/2/1
device(config-if-e1000-1/2/1)# rate-limit output shaping 500 priority 7
```

The following example configures the maximum rate at which outbound traffic is sent on a LAG port.

```
device(config)# lag lag1 static
device(config-lag-lag1)# rate-limit output shaping ethe 1/1/15 651
```

rate-limit-log

Configures the global level BUM suppression logging interval.

Syntax

rate-limit-log [*minutes*]

[no] rate-limit-log [*minutes*]

Command Default

The default logging interval 5 minutes.

Parameters

minutes

Specifies the interval, in whole mimutes, between Syslog notifications. The value can be any integer from 1 to 10.

Modes

Global configuration mode

Usage Guidelines

Use the **no** form of the command to return to the default value (5 minutes).

Examples

The following example shows how to set the BUM suppression notification Syslog logging interval to 3 minutes.

```
device(config)# rate-limit-log 3
```

History

Release version	Command history
08.0.30h	This command was introduced.

rconsole

Establishes a remote console session with a stack unit.

Syntax

rconsole *stack-unit*

rconsole active

Command Default

A remote console session is not established.

Parameters

stack-unit
: Stack-unit ID of the remote device

active
: Specifies the active controller

Modes

Privileged EXEC mode

Usage Guidelines

The **rconsole** command is used primarily to allow the active controller to establish a remote connection to a unit in the stack.

Member and standby controller stack units can use the **rconsole** command only to establish a remote connection to the active controller. By default, a stack unit's console is automatically redirected to the active controller's console. If the user has terminated the rconsole session on a stack member to place the unit in local console mode, the **rconsole active** command can be used to reconnect to the active controller console, The **rconsole** command must be followed by the keyword **active** when the target unit is the stack active controller. Attempting to use the unit ID of the active controller produces an error.

When the **rconsole** command is entered from a stack unit other than the active controller, you are prompted to authenticate with username and password. The username and password are not required when the command is entered from the active controller.

On stack switchover, all unit consoles require the user to log in again.

By default, an rconsole session times out after two minutes of inactivity, which is the same default for any CLI session. The timeout for an rconsole session is controlled by the **cli timeout** command. If the cli timeout setting is "0" the rconsole session, like other CLI sessions, never times out.

You can terminate a session in any of these ways:

- Entering the **exit** command from the User EXEC level
- Entering the **logout** command at any level

Examples

The following example establishes a remote console session from a stack member to the stack active controller. A login username ("johnc" in the example) and password are required.

```
device# rconsole active
console going online
Press any key to continue..
Press any key to continue...
Connecting to active controller 1 console...(Press Ctrl Shift -  x to exit)
Ruckus-ICX login: johnc
Password:

7550-Stack> enable
No password has been assigned yet...7550-Stack#
7550-Stack# show stack
T=7m17.4: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX7550-48    active  4cb1.cd20.1f4e   0 local   Ready
2  S ICX7550-48    standby 4cb1.cd20.23ae   0 remote  Ready
3  S ICX7550-24ZP  member  94bf.c43f.c33e   0 remote  Ready

    active       standby
     +---+        +---+        +---+
 -2/2| 1 |2/1--2/2| 2 |2/1--2/2| 3 |2/1-
  |   +---+        +---+        +---+   |
  |                                     |
  |-------------------------------------|
Standby u2 - protocols ready, can failover or manually switch over
Current stack management MAC is 4cb1.cd20.1f4e
slot 2: config = oper = stack-40g
All UP stack ports operate at 40G
```

In the following example, a remote console session is established with member stack unit 3. Notice the difference in the device prompt. The output of the **show stack** command is different when entered for a stack member.

```
ICX7550-48 Router# rconsole 3
Connecting to unit 3... (Press Ctrl-x or type exit to exit)
[MEMBER]rconsole-3@ICX7550-24ZP Router#
[MEMBER]rconsole-3@ICX7550-24ZP Router# show stack
T=3h16m53.3: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
3  S ICX7550-24ZP  member  94bf.c43f.c33e   0 local   Ready

                active       standby
     +---+       +---+        +---+
 -2/2| 3 |2/1--2/2| 1 |2/1--2/2| 2 |2/1-
  |   +---+       +---+        +---+   |
  |                                     |
  |-------------------------------------|
Current stack management MAC is 94bf.c43f.c33e
slot 2: config = oper = stack-40g/100g
All UP stack ports operate at 40G
[MEMBER]rconsole-3@ICX7550-24ZP Router#
```

History

Release version	Command history
08.0.00a	This command was introduced.
09.0.00	This command was modified to require authentication when issued from a stack member other than the active controller.

rd

Distinguishes a route for Virtual Routing and Forwarding (VRF) instances.

Syntax

rd {*ASN* **:** *nn* | *IP-address* **:** *nn* }

Parameters

ASN:nn

Configures the RD as autonomous system number followed by a colon (:) and a unique arbitrary number.

IP-address:nn

Configures the RD as IP address followed by a colon (:) and a unique arbitrary number.

Modes

VRF configuration mode

Usage Guidelines

Each VRF instance is identified by a unique route distinguisher (RD). The RD is prepended to the address being advertised. Because the RD provides overlapping client address space with a unique identifier, the same IP address can be used in different VRFs without conflict. The RD can be an autonomous system number, followed by a colon (:) and a unique arbitrary number as in "10:11". Alternatively, it canbe a local IP address followed by a colon (:) and a unique arbitrary number, as in "1.1.1.1:100".

Once the Route Distinguisher is configured for a VRF it cannot be changed or deleted. To remove the route distinguisher, you must delete the VRF.

Examples

The following example configures a Route Distinguisher.

```
device(config)# vrf red
sevice(config-vrf-red)# rd 101:101
```

re-authentication (Flexible Authentication)

Periodically re-authenticates clients connected to MAC authentication-enabled interfaces and 802.1X-enabled interfaces.

Syntax

re-authentication

no re-authentication

Command Default

Re-authentication is not enabled.

Modes

Authentication configuration mode

Usage Guidelines

The **no** form of this command disables re-authentication.

When periodic reauthentication is enabled, the device reauthenticates the clients every 3,600 seconds by default. The reauthentication interval configured using the **reauth-period** command takes precedence.

Examples

The following example configures periodic re-authentication using the default interval of 3,600 seconds.

```
device(config)# authentication
device(config-authen)# re-authentication
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.40a	Reauthentication support was added to MAC authentication-enabled ports.

rear-module

Defines the operating mode of ports on the rear module.

Syntax

rear-module { **stack-40g** | **uplink-100g** | **uplink-40g**}

no rear-module { **stack-40g** | **uplink-100g** | **uplink-40g**}

Command Default

By default, the rear module is used for stacking with two 100-Gbps ports.

Parameters

stack-40g
Configures the rear module for stacking with four 40-Gbps ports.

uplink-100g
Configures the rear module for two 100-Gbps uplink ports.

uplink-40g
Configures the rear module for two 40-Gbps uplink ports.

Modes

Global configuration mode

Usage Guidelines

The command applies to ICX 7650 devices only.

Use the **no** form of the command to return the module to default operation.

100-Gbps and 40-Gbps operation require different optics. If optics do not match the configuration, the port link is down.

Local and remote ports connected through the rear module must operate in the same mode.

The **rear-module** command stacking options are allowed only when no uplink configuration is present on the rear module.The **rear-module** command cannot be used to configure uplink ports once the stack is formed. Refer to the *FastIron Stacking Configuration Guide* for information on enabling stacking or removing configuration.

You are, however, allowed to enter stacking configuration while the rear module operates in uplink mode. The stacking configuration remains offline, and stacking election is blocked. Once you enter the **write memory** command, the system prompts you to save or erase the stacking configuration.

You must execute the **write memory** and **reload** commands for any change to the **rear-module** setting to take effect.

Examples

The following example configures the rear module to operate in 40-Gbps stacking mode.

```
device# configure terminal
device(config)# rear-module stack-40G
device(config)# exit
device# write memory
device#  reload
```

The following example returns the rear module to 100-Gbps stacking mode (the default).

```
device# configure terminal
device(config)# no rear-module stack-40G
device(config)# exit
device# write memory
device#  reload
```

History

Release version	Command history
08.0.70	This command was introduced.

reauth-period

Configure the interval at which clients connected to MAC authentication-enabled ports and 802.1X authentication-enabled ports are periodically reauthenticated.

Syntax

reauth-period *seconds*

no reauth-period*seconds*

Command Default

The re-authentication period is 3600 seconds.

Parameters

seconds

Sets the re-authentication period. The range is 1 through 4294967295 seconds.

Modes

Authentication configuration mode

Usage Guidelines

While the **re-authentication** command configures periodic re-authentication using the default interval of 3600 seconds, the **reauth-period** command allows you to specify a value in seconds.

The reauthentication interval configured using the **reauth-period** command can be overwritten for each client by the RADIUS server through the Session-Tmeout and Termination-Action attributes.

The **no** form of this command reverts the re-authentication period to the default interval of 3600 seconds.

Examples

The following example configures periodic re-authentication with an interval of 2,000 seconds.

```
device(config)# authentication
device(config-authen)# re-authentication
device(config-authen)# reauth-period 2000
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.40a	Reauthentication support was added to MAC authentication-enabled ports.
08.0.30j	Reauthentication support was added to MAC authentication-enabled ports.

reauth-time

Configures the number of seconds an authenticated user remains authenticated.

Syntax

reauth-time *seconds*

no reauth-time *seconds*

Command Default

The default is 28,800 seconds.

Parameters

seconds

The number of seconds an authenticated user remains authenticated. The valid values are from 0 through 128,000 seconds. The default is 28,800.

Modes

Web Authentication configuration mode

Usage Guidelines

After a successful authentication, a user remains authenticated for a duration of time. At the end of this duration, the host is automatically logged off. The user must be reauthenticated again.

Setting a value of 0 means the user is always authenticated and will never have to reauthenticate, except if an inactive period less than the reauthentication period is configured on the Web Authentication VLAN. If this is the case, the user becomes deauthenticated if there is no activity and the timer for the inactive period expires.

The **no** form of the command sets the value to the default.

Examples

The following example configures the reauthentication time as 300 seconds.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# reauth-time 300
```

rebind-time (DHCPv6)

Specifies the time interval after which a client transitions to the rebinding state after receiving an IPv6 address.

Syntax

rebind-time *interval*

no rebind-time *interval*

Command Default

The rebind time interval is 0 seconds by default.

Parameters

interval

Specifies the time interval in seconds. Valid values range from 0 through 65535. The default is 0.

Modes

DHCPv6 server configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the "Software Upgrade and Downgrade" chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The rebind time should always be greater than the renewal time. Refer to the **renewal-time** command for more information.

When configuring the DHCPv6 server using this command along with the **preferred-lifetime (DHCPv6)**, **renewal-time (DHCPv6)**, and **valid-lifetime (DHCPv6)** commands, enter the commands in the following order:

1. **preferred-lifetime (DHCPv6)**
2. **valid-lifetime (DHCPv6)**
3. **rebind-time (DHCPv6)**
4. **renewal-time (DHCPv6)**

NOTE
Failure to enter the commands in the order outlined previously when configuring the DHCPv6 server results in a CLI error.

The **no** form of the command restores the default.

Examples

The following example sets the rebind time interval for a DHCPv6 server to 450 seconds.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# rebind-time 450
```

History

Release version	Command history
08.0.90	This command was introduced.

Related Commands

preferred-lifetime (DHCPv6)

redistribute

Configures the device to redistribute IPv4 and IPv6 routes from one routing domain to another.

Syntax

redistribute { **ospf** } [**match** [**external1** | **external2** | **internal**] | **metric** *num* | **route-map** *string*]

redistribute { *source-protocol* } [**metric** *num* | **metric-type** { **type1** | **type2** } | **route-map** *string*]

no redistribute { **ospf** } [**match** [**external1** | **external2** | **internal**]] [**metric** *num*] [**route-map** *string*]

no redistribute { *source-protocol* } [**metric** *num*] [**metric-type** { **type1** | **type2** }] [**route-map** *string*]

Command Default

The device does not redistribute routing information.

Parameters

match

Specifies the type of route.

external1

Specifies OSPF Type 1 external routes.

external2

Specifies OSPF Type 2 external routes.

internal

Specifies OSPF internal routes.

source-protocol

Specifies the source protocol from which routes are being redistributed. It can be one of the following keywords: **bgp**, **connected**, **ospf**, **rip**, or **static**.

metric *num*

Specifies a metric for redistributed routes. Range is from 0 through 65535. No value is assigned by default.

route-map *string*

Specifies a route map to be consulted before a route is added to the routing table.

metric-type

Specifies the external link type associated with the default route advertised into the OSPF routing domain.

type1

Specifies a type 1 external route.

type2

Specifies a type 2 external route.

level-1

Specifies level-1 routes.

level-1-2

Specifies both level-1 and level-2 routes.

level-2

Specifies level-2 routes.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

OSPF router configuration mode

OSPFv3 router configuration mode

OSPF router VRF configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

Routes can be filtered by means of an associated route map before they are distributed.

The **metric-type** { **type1** | **type2** } option is only available in OSPFv3 router configuration mode and OSPFv3 router VRF configuration mode.

The **match**, **metric**, and **metric-type** options are not available in OSPF router configuration mode and OSPF router VRF configuration mode.

NOTE
The **default-metric** command does not apply to the redistribution of directly connected routes. Use a route map to change the default metric for directly connected routes.

The **no** form of the command restores the defaults.

Examples

The following example redistributes OSPF external type 1 routes.

```
device# configure terminal
device(config)# router bgp
device(config-bgp)# redistribute ospf match external1
```

The following example redistributes OSPF routes with a metric of 200.

```
device# configure terminal
device(config)# router bgp
device(config-bgp)# redistribute ospf metric 200
```

The following example redistributes OSPFv3 external type 2 routes in VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp)# address-family ipv6 unicast vrf red
device(config-bgp-ipv6u-vrf)# redistribute ospf match external2
```

The following example redistributes static routes into BGP4+ and specifies a metric of 200.

```
device# configure terminal
device(config)# router bgp
device(config-bgp)# address-family ipv6 unicast
device(config-bgp-ipv6u)# redistribute static metric 200
```

The following example redistributes RIP routes and specifies that route-map "rm2" be consulted in BGP address-family IPv6 unicast configuration mode.

```
device# configure terminal
device(config)# router bgp
device(config-bgp)# address-family ipv6 unicast
device(config-bgp-ipv6u)# redistribute rip route-map rm2
```

The following example redistributes BGP routes and specifies that route-map "rm7" be consulted in OSPF router configuration mode.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# redistribute bgp route-map rm7
```

The following example redistributes OSPF routes and specifies a type1 external route in OSPFv3 VRF configuration mode.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# redistribute ospf metric-type type1
```

redistribute (BGP)

Configures the device to redistribute RIP routes, directly connected routes, or static routes into BGP4 and BGP4+.

Syntax

redistribute { **connected** | **rip** | **static** } [**metric** *num*] [**route-map** *string*]

no redistribute { **connected** | **rip** | **static** } [**metric** *num*] [**route-map** *string*]

Command Default

The device does not redistribute routing information between BGP4 or BGP4+ and the IP interior gateway protocol OSPF.

Parameters

connected
Redistributes connected routes.

rip
Redistributes Routing Information Protocol (RIP) routes.

static
Redistributes static routes.

metric
Metric for redistributed routes.

num
Specifies a metric number. The range is from 0 through 4294967297. No value is assigned by default.

route-map
Specifies that a route map be consulted before a route is added to the routing table.

string
Specifies a route map to be consulted before a route is added to the routing table.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

Use the **no** form of the command to restore the defaults. When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Use this command to configure the device to redistribute RIP, directly connected routes, or static routes into BGP4 or BGP4+. The routes can be filtered by means of an associated route map before they are distributed.

NOTE
The **default-metric** command does not apply to the redistribution of directly connected routes into BGP4 or BGP4+. Use a route map to change the default metric for directly connected routes.

Examples

This example redistributes static routes into BGP4 and specifies a metric of 200.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# redistribute static metric 200
```

This example redistributes static routes into BGP4+ and specifies that route-map "rm5" be consulted.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# redistribute route-map rm5
```

This example redistributes directly connected routes into BGP4 in VRF instance "red".

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv4 unicast vrf red
device(config-bgp-ipv4u-vrf)# redistribute connected
```

History

Release version	Command history
08.0.30	Support was added for the BGP address-family IPv6 unicast VRF configuration mode.

redistribute (RIP)

Configures the device to redistribute connected routes, learned static routes, OSPF routes, or BGP4 routes through RIP. The RIP router can then advertise these routes to RIP neighbors.

Syntax

redistribute { **connected** | **bgp** | **ospf** | **static** [**metric** *value* | **route-map** *name*] }

no redistribute { **connected** | **bgp** | **ospf** | **static** [**metric** *value* | **route-map** *name*] }

Command Default

By default, redistribution of other routes is disabled. Once redistribution of a particular type of route is enabled, the default action is to permit redistribution, even with redistribution filters applied to the virtual routing interface.

Parameters

connected
Redistributes connected routes.

bgp
Redistributes BGP routes.

ospf
Redistributes OSPF routes.

static
Redistributes IP static routes.

metric
Sets a RIP route metric to the value specified.

value
Specifies the RIP route metric as a value from 1 through 15.

route-map
Applies the specified route map to routes designated for redistribution.

name
Specifies the route-map to be applied.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command removes redistribution actions specified in the command.

To control redistribution tightly, apply a filter to deny all routes and give it the highest ID. Then apply filters to allow specific routes.

RIP redistribution filters apply to all interfaces. Use route maps to define where to deny or permit redistribution. Refer to the route-map command for information on configuring route maps for RIP.

Examples

The following example redistributes connected routes and adds 10 to the metric for each route.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# redistribute connected metric 10
```

The following example discontinues redistribution and the added metric applied in the previous example.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# no redistribute connected metric 10
```

The following example redistributes all connected route types based on the specifics of the route map named routemap1.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# redistribute connected route-map routemap1
```

redistribute (RIPng)

Configures RIPng to advertise routes from the specified protocol or connections.

Syntax

redistribute { **bgp** | **connected** | **ospf** | **static** [**metric** *value*] }

no redistribute { **bgp** | **connected** | **ospf** | **static** [**metric** *value*] }

Command Default

By default, routes from these protocols are not shared between RIPng neighbors.

Parameters

connected
Redistributes directly connected IPv6 network routes.

bgp
Redistributes BGP4+ routes.

ospf
Redistributes OSPFv3 routes.

static
Redistributes IPv6 static routes.

metric
Sets a RIPng route metric to the value specified. When no metric is set, the default metric of one is used.

value
Specifies RIPng route metric as a value from1 through 15.

Modes

RIPng router configuration mode

Usage Guidelines

The **no** form of the command removes redistribution actions specified in the command.

Examples

The following example configures the RIPng router to redistribute OSPF routes.

```
device# configure terminal
device(config)# ipv6 router rip
device(config-ripng-router)# redistribute ospf
```

refresh-time (DHCPv6)

Sets the refresh time for a DHCPv6 Server.

Syntax

refresh-time *interval*

no refresh-time *interval*

Command Default

No refresh time interval is configured.

Parameters

interval

Specifies the time interval in seconds. Valid values range from 0 through 65535. The default is 0.

Modes

DHCPv6 server configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the “Software Upgrade and Downgrade” chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The **no** form of the command restores the default.

Examples

The following example sets the refresh time for a DHCPv6 server to 80 seconds.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# refresh-time 80
```

History

Release version	Command history
08.0.90	This command was introduced.

regenerate-seq-num

Changes the sequence numbers of the rules within a specified access control list (ACL) to provide flexibility in inserting new rules between existing rules.

Syntax

regenerate-seq-num [*start-sequence-value* [*increment-value*]]

Parameters

start-sequence-value

Specifies the sequence number assigned to the first rule. Values range from 1 through 65000. The default is 10.

increment-value

Specifies the increment between the regenerated sequence numbers. Values range from 1 through 100. The default is 10.

Modes

IPv4 ACL configuration mode

IPv6 ACL configuration mode

Usage Guidelines

This command is effective for all IPv4 ACL types: named or numbered; standard or extended.

This command is effective for IPv6 ACLs.

After resequencing, you do not need to rebind the ACL.

From FastIron 08.0.61, sequence regeneration settings (first sequence number and sequence interval number) are persistent, even following reload of the active unit.

Examples

The following example regenerates sequence numbers for a standard numbered IPv4 ACL.

```
device# configure terminal
device(config)# ip access-list standard 18
device(config-std-ipacl-18)# regenerate-seq-number
```

The following example regenerates sequence numbers for an extended named IPv4 ACL, specifying that the first rule be numbered 100, with an increment of 15 between each sequence number.

```
device# configure terminal
device(config)# ip access-list extended extACLtest_01
device(config-ext-ipacl-extACLtest_01)# regenerate-seq-number 100 15
```

The following example regenerates sequence numbers for an IPv6 ACL.

```
device# configure terminal
device(config)# ipv6 access-list ACL6_01
device(config-ipv6-acces-list ACL6_01)# regenerate-seq-number
```

The following example demonstrates that non-default sequence regeneration is persistent following reload of the active unit.

```
device# configure terminal
device(config)# ip access-list extended testACL
device(config-ext-ipacl-testACL)# permit ip host 1.1.1.111 host 2.2.2.111
device(config-ext-ipacl-testACL)# permit ospf any any
device(config-ext-ipacl-testACL)# permit pim any any

device(config-ext-ipacl-testACL)# show ip access-lists testACL
Extended IP access list testACL: 3 entries
10: permit ip host 1.1.1.111 host 2.2.2.111
20: permit ospf any any
30: permit pim any any

device(config-ext-ipacl-testACL)# regenerate-seq-number 100 100

device(config-ext-ipacl-testACL)# show ip access-lists testACL
Extended IP access list testACL: 3 entries
100: permit ip host 1.1.1.111 host 2.2.2.111
200: permit ospf any any
300: permit pim any any

device(config-ext-ipacl-testACL)# sequence 150 deny ip 20.20.20.96 0.0.0.15 any

device(config-ext-ipacl-testACL)# show ip access-lists testACL
Extended IP access list testACL: 4 entries
100: permit ip host 1.1.1.111 host 2.2.2.111
150: deny ip 20.20.20.96 0.0.0.15 any
200: permit ospf any any
300 permit pim any any

<Reload of active unit>

device(config-ext-ipacl-testACL)# show ip access-lists testACL
Extended IP access list testACL: 4 entries
100: permit ip host 1.1.1.111 host 2.2.2.111
150: deny ip 20.20.20.96 0.0.0.15 any
200: permit ospf any any
300 permit pim any any
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.61	The command has been modified so that a non-default run of the command is persistent following device reload.

register-probe-time

Configures the time the PIM router waits for a register-stop from a rendezvous point (RP) before it generates another NULL register to the PIM RP

Syntax

register-probe-time *seconds*

no register-probe-time *seconds*

Command Default

The wait time is 10 seconds.

Parameters

seconds

Specifies the time, in seconds, between queries. The range is 10 through 50 seconds. The default is 10 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the wait time to 10 seconds.

The register-probe time configuration applies only to the first-hop PIM router.

NOTE
When a PIM first-hop router has successfully registered with a PIM RP, the PIM first-hop router will not default back to the data registration. All subsequent registers will be in the form of the NULL registration.

Examples

This example configures the register-probe time to 20 seconds.

```
Device(config)#router pim
Device(config-pim-router)#register-probe-time 20
```

register-rate-limit

Configures the register message rate limit for Protocol Independent Multicast (PIM) and IPv6 Protocol Independent Multicast (PIMv6).

Syntax

register-rate-limit *rate-limit*

no register-rate-limit *rate-limit*

Command Default

The default register message rate limit is 1 packet per second.

Parameters

rate-limit

Specifies the maximum number of register packets sent or received per second by the router. Valid values range from 1 through 50. The default is 1.

Modes

PIM router configuration mode

IPv6 PIM router configuration mode

Usage Guidelines

This command can be used on both designated router (DR) and rendezvous point (RP) switches. The rate limit configuration applies to all (S, G) pairs.

The register rate limit works only when a S,G, or *G entry is created in the Multicast Forwarding Information Base (MFIB). In the absence of them, the rate limit fallbacks to a global 1000pps rate. The rate limit cannot be enforced until the entry is created in the MFIB. Entry creation usually takes some finite amount of time on reception of register message, after which the rate limit is enforced.

The **no** form of the command restores the rate limit to 1.

Examples

The following example sets the register message rate limit to 20 packets per second.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# register-rate-limit 20
```

The following example restores the register message rate limit to the default of 1 packet per second.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# no register-rate-limit
```

The following example sets the register message rate limit to 15 packets per second for PIMv6.

```
device# configure terminal
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# register-rate-limit 15
```

History

Release version	Command history
09.0.10	This command was introduced.

register-suppress-time

Configures the interval at which the PIM router triggers the NULL register message.

Syntax

register-suppress-time *seconds*

no register-suppress-time *seconds*

Command Default

The interval at which PIM router triggers the NULL register message is 60 seconds.

Parameters

seconds

Specifies the interval, in seconds, between queries. The range is 60 through 120 seconds. The default is 60 seconds.

Modes

PIM router configuration mode

Usage Guidelines

The **no** form of this command restores the register-suppress interval to 60 seconds.

The register-suppress interval configuration applies only to the first-hop PIM router.

Examples

The following example configures the interval at which PIM router triggers the NULL register message to 90 seconds.

```
Device(config)#router pim
Device(config-pim-router)#register-suppress-time 90
```

relative-utilization

Configures uplink utilization lists that display the percentage of a given uplink port's bandwidth that is used by a specific list of downlink ports.

Syntax

relative-utilization *number* **uplink ethernet** *stack-id/slot/port* [**to** *stack-id/slot/port* ||[**ethernet** *stack-id/slot/port* **to** *stack-id/slot/port* | **ethernet** *stack-id/slot/port*] ...] **downlink ethernet** *stack-id/slot/port* [**to** *stack-id/slot/port* | [**ethernet** *stack-id/slot/port* **to***stack-id/slot/port* | **ethernet** *stack-id/slot/port*] ...]

no relative-utilization *number* **uplink ethernet** *stack-id/slot/port* [**to** *stack-id/slot/port* | [**ethernet** *stack-id/slot/port* **to** *stack-id/slot/port* | **ethernet** *stack-id/slot/port*] ...] **downlink ethernet** *stack-id/slot/port* [**to** *stack-id/slot/port* | [**ethernet** *stack-id/slot/port* **to** *stack-id/slot/port* | **ethernet** *stack-id/slot/port*] ...]

Command Default

Relative utilization is not configured.

Parameters

number
: Specifies the list number. Valid values range from 1 through 4. You can specify up to four lists.

uplinkethernet*stack-id/slot/port*
: Specifies the uplink Ethernet port.

to*stack-id/slot/port*
: Specifies a range of Ethernet ports.

downlinkethernet*stack-id/slot/port*
: Specifies the downlink Ethernet port.

Modes

Global configuration mode

Usage Guidelines

Each uplink utilization list consists of the following:

- Utilization list number (1, 2, 3, or 4).
- One or more uplink ports.
- One or more downlink ports.

Each list displays the uplink port and the percentage of that port's bandwidth that was utilized by the downlink ports over the most recent 30-second interval.

You can configure up to four bandwidth utilization lists.

You can specify a list or range of ports as uplink or downlink ports.

The **no** form of the command removes the uplink utilization list.

Examples

The following example configures an uplink utilization list.

```
device# configure terminal
device(config)# relative-utilization 1 uplink ethernet 1/1/1 downlink ethernet 1/2/2 to 1/3/2
```

History

Release version	Command history
09.0.00	This command was deprecated.
09.0.10c	Support for this command was restored.

reload

Reloads a stand-alone device, a stack, or specified stack units other than the active controller.

Syntax

reload [**after** *duration* | **at** *time date* [**primary** | **secondary**]]

reload cancel

reload [**unit-id** *unit-list*]

Parameters

after *duration*

Schedules reload after the specified duration, entered in the format *dd:hh:mm*, where *dd* is the number of days; *hh* represents the number of hours, from 00 to 23; and *mm* represents minutes, from 00 to 59.

at *time date*

Schedules reload for a specific time and date. Time is entered in this format: *hh:mm:ss*, where *hh* represents hours, from 00 to 24; *mm* represents minutes, from 00 to 59; and *ss* represents seconds, from 00 to 59. The date is entered in this format: *mm-dd-yy*, where *mm* is the month (for example, 01 for January); *dd* is the day in the month (for example, 09); and *yy* is the year (for example, 17).

cancel

Cancels the scheduled stack reload.

primary

Reloads from primary image flash.

secondary

Reloads from secondary image flash.

unit-id *unit-list*

Specifies stack units to reload. When the **unit-id** is not present, the stand-alone device or the stack on which the **reload** command is issued is reloaded. The *unit-list* may contain a single ID (2), a series of IDs (2,3), a range of IDs (4-6), or a combination (2,3,4-6,8). Do not use spaces between entries.

Modes

Privileged EXEC mode

Usage Guidelines

Stack units can be reloaded only if they are not the active controller.

The active controller automatically reloads on stack failover to the standby controller. If you need to reload the active controller manually, use the **stack switch-over** command. When switchover occurs, you will be able to load the former active controller with the **reload** *unit-id* command.

Examples

When the **reload** command is entered on the active controller without the **unit-id** parameter as shown in the following example, the entire stack reloads. When the **reload** command is entered on a stand-alone device without a unit ID, the device reloads.

```
device# reload
```

History

Release version	Command history
08.0.00a	This command was introduced.

remark

Adds a comment to describe entries in an IPv4 or IPv6 ACL.

Syntax

remark *comment-text*

no remark *comment-text*

Command Default

No comments are added to describe entries in an IPv4 or IPv6 ACL.

Parameters

comment-text

Specifies the comment for the ACL entry, up to 256 alphanumeric characters.

Modes

IPv4 ACL configuration mode

IPv6 ACL configuration mode

Usage Guidelines

You can add a comment by entering the **remark** command immediately preceding an ACL entry. The comment appears in the output of show commands that display ACL information.

The **no** form of the command deletes the comment text added for an ACL entry.

Examples

The following example configures remarks for an IPv4 ACL.

```
device(config)# ip access-list extended tcp_udp
device(config-ext-ipacl-tcp_udp)# remark The following line permits TCP packets
device(config-ext-ipacl-tcp_udp)# permit tcp 192.168.4.40/24 2.2.2.2/24
device(config-ext-ipacl-tcp_udp)# remark The following permits UDP packets
device(config-ext-ipacl-tcp_udp)# permit udp 192.168.2.52/24 2.2.2.2/24
device(config-ext-ipacl-tcp_udp)# deny ip any any
```

The following example configures remarks for an IPv6 ACL.

```
device(config)# ipv6 access-list rtr
device(config-ipv6-access-list rtr)# remark This entry permits ipv6 packets from 2001:DB8::2 to any
destination
device(config-ipv6-access-list rtr)# permit ipv6 host 2001:DB8::2 any
device(config-ipv6-access-list rtr)# remark This entry denies udp packets from any source to any
destination
device(config-ipv6-access-list rtr)# deny udp any any
device(config-ipv6-access-list rtr)# remark This entry denies IPv6 packets from any source to any
destination
device(config-ipv6-access-list rtr)# deny ipv6 any any
```

The following example shows the comment text for the ACL named "rtr" in a show running-config display.

```
device# show running-config
ipv6 access-list rtr
remark This entry permits ipv6 packets from 2001:DB8::2 to any destination permit ipv6 host 2001:DB8::2
any
remark This entry denies udp packets from any source to any destination deny udp any any
remark This entry denies IPv6 packets from any source to any destination deny ipv6 any any
```

The following example shows how to delete a comment from an IPv6 ACL entry.

```
device(config)# ipv6 access-list rtr
device(config-ipv6-access-list rtr)# no remark This entry permits ipv6 packets from 2001:DB8::2 to any
destination
```

remote-identifier

Configures a remote identifier for an Internet Key Exchange version 2 (IKEv2) profile.

Syntax

remote-identifier { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

no remote-identifier { **address** { *ip-address* | *ipv6-address* } | **dn** *dn-name* | **email** *email-address* | **fqdn** *fqdn-name* | **key-id** *key-id* }

Command Default

A remote identifier is not configured for an IKEv2 profile.

Parameters

address *ip-address*
: Specifies an IPv4 address as the remote identifier.

address *ipv6-address*
: Specifies an IPv6 address as the remote identifier.

dn *dn-name*
: Specifies a Distinguished Name (DN) as the remote identifier.

email *email-address*
: Specifies an email address as the remote identifier.

fqdn *fqdn-name*
: Specifies a fully qualified domain name (FQDN) as the remote identifier.

key-id *key-id*
: Specifies a key ID as the remote identifier.

Modes

IKEv2 profile configuration mode

Usage Guidelines

The **no** form of the command removes the remote identifier configuration.

Examples

The following example shows how to configure IPv4 address 10.2.2.1 as the remote identifier for an IKEv2 profile named prof_mktg.

```
device(config)# ikev2 profile prof-mktg
device(config-ike-profile-prof-mktg)# remote-identifier address 10.2.2.1
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support was added for IPv6.

remote-loopback

Starts or stops the remote loopback procedure on a remote device.

Syntax

remote-loopback ethernet *stackid/slot/port* { **start** | **stop** }

Command Default

Remote loopback is not initiated on a remote device.

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet interface on which loopback is to be enabled.

start

Starts the remote loopback procedure on a remote device.

stop

Stops the remote loopback procedure on a remote device.

Modes

EFM-OAM protocol configuration mode

Usage Guidelines

The **remote-loopback ethernet** *stackid/slot/port* { **start** | **stop** } command is valid only on the Data Terminal Equipment (DTE) operating in the active mode.

When the remote loopback mode is enabled, all the non-OAMPDUs are looped back at the remote end.

A port ceases to be in the remote loopback mode if any event triggers a change in the port status (up or down).

If EEE is enabled globally, port ceases to be in the remote loopback mode.

Ethernet loopback and EFM-OAM remote loopback cannot be configured on the same interface.

NOTE
RUCKUS recommends you ensure that any higher layer protocol running over the local and remote loopback ports does not block the interfaces in the VLAN on which loopback traffic testing is being performed.

Examples

The following example initiates the remote loopback procedure on a remote DTE.

```
device(config)# link-oam
device(config-link-oam)# remote-loopback ethernet 3/1/1 start
```

The following example stops the remote loopback procedure on a remote DTE.

```
device(config)# link-oam
device(config-link-oam)# remote-loopback ethernet 3/1/1 stop
```

History

Release version	Command history
08.0.30	This command was introduced.

remove-tagged-ports

Removes all tagged member ports from a VLAN or from multiple VLANs.

Syntax

remove-tagged-ports

Modes

VLAN configuration mode

Multiple VLAN configuration mode

Examples

The following example removes all tagged member ports from VLAN 2.

```
device(config)# show run vlan 2
vlan 2 by port
tagged ethernet 1/1/1 to 1/1/3
untagged ethernet 1/1/4 to 1/1/16
!
!
device(config)# vlan 2
device(config-vlan-2)# remove-tagged-ports
device(config-vlan-2)# show run vlan 2
vlan 2 by port
untagged ethernet 1/1/4 to 1/1/6
!
!
```

The following example removes all tagged member ports from a range of VLANs.

```
device(config)# show run vlan
vlan 1 name DEFAULT-VLAN by port
!
vlan 2 by port
tagged ethernet 1/1/1 to 1/1/5
untagged ethernet 1/1/6 to 1/1/7
!
vlan 3 by port
tagged ethernet 1/1/1 to 1/1/5
untagged ethernet 1/1/8 to 1/1/9
!
!
device(config)# vlan 2 3
device(config-mvlan-2-3)# remove-tagged-ports
device(config-mvlan-2-3)# show run vlan
vlan 2 by port
untagged ethernet 1/1/6 to 1/1/7
!
vlan 3 by port
untagged ethernet 1/1/8 to 1/1/9
!
!
```

History

Release version	Command history
08.0.40	This command was introduced.

remove-untagged-ports

Removes all untagged member ports from a VLAN or from multiple VLANs.

Syntax

remove-untagged-ports

Modes

VLAN configuration mode

Multiple VLAN configuration mode

Examples

The following example removes all untagged member ports from VLAN 2.

```
device(config)# show run vlan 2
vlan 2 by port
tagged ethernet 1/1/1 to 1/1/3
untagged ethernet 1/1/4 to 1/1/16
!
!
device(config)# vlan 2
device(config-vlan-2)# remove-untagged-ports
device(config-vlan-2)# show run vlan 2
vlan 2 by port
tagged ethernet 1/1/1 to 1/1/3
!
!
```

The following example removes all untagged member ports from a range of VLANs.

```
device(config)# show run vlan
vlan 2 by port
tagged ethernet 1/1/1 to 1/1/3
untagged ethernet 1/1/4 to 1/1/16
!
!
vlan 3 by port
tagged ethernet 1/1/1 to 1/1/3
untagged ethernet 1/1/4 to 1/1/16
!
!
device(config)# vlan 2 3
device(config-mvlan-2-3)# remove-untagged-ports
device(config-vlan-2-3)# show run vlan
vlan 2 by port
tagged ethernet 1/1/1 to 1/1/3
!
!
vlan 3 by port
tagged ethernet 1/1/1 to 1/1/3
!
!
```

History

Release version	Command history
08.0.40	This command was introduced.

remove-vlan (VLAN Group)

Removes individual VLANs or a range of VLANs from a VLAN group.

Syntax

remove-vlan *vlan-id* [**to** *vlan-id*]

Parameters

vlan-id

Specifies the VLAN number to remove from a VLAN group.

to *vlan-id*

Specifies the range of VLAN numbers to remove from a VLAN group.

Modes

VLAN group configuration mode

Usage Guidelines

Use the **vlan-group** command to create a range of VLANs. To remove one or more VLANs from a VLAN group, use the **remove-vlan** command.

Examples

The following example removes the specified VLANs from vlan-group 1.

```
device(config)# vlan-group 1 vlan 10 to 15
device(config-vlan-group-1)# remove-vlan 10
device(config-vlan-group-1)# remove-vlan 11 to 12
device(config-vlan-group-1)# show vlan-group
vlan group 1 vlan 13 to 15
!
!
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.50	This command is no longer supported in Interface Configuration mode.

renewal-time (DHCPv6)

Specifies the time interval after which the client transitions to the renewing state upon receipt of an IPv6 address.

Syntax

renewal-time *interval*

no renewal-time *interval*

Command Default

The renewal time interval is 0 seconds.

Parameters

interval

Specifies the time interval in seconds. Valid values range from 0 through 65535. The default is 0.

Modes

DHCPv6 server configuration mode

Usage Guidelines

To use this command, you must upgrade to FastIron 08.0.90 using the Unified FastIron Image (UFI). Refer to the “Software Upgrade and Downgrade” chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The renewal time must always be less than then the least preferred lifetime configured on the server. Refer to the **preferred-lifetime** command for more information. The renewal time must always be less than the configured rebind time. Refer to the **rebind-time** command for more information. The **no** form of the command restores the default.

When configuring the DHCPv6 server using this command along with the **preferred-lifetime (DHCPv6)**, **valid-lifetime (DHCPv6)**, and **rebind-time (DHCPv6)** commands, enter the commands in the following order:

1. **preferred-lifetime (DHCPv6)**
2. **valid-lifetime (DHCPv6)**
3. **rebind-time (DHCPv6)**
4. **renewal-time (DHCPv6)**

NOTE
Failure to enter the commands in the order outlined previously when configuring the DHCPv6 server results in a CLI error.

Examples

The following example sets the renewal time for a DHCPv6 server to 300 seconds.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# renewal-time 300
```

History

Release version	Command history
08.0.90	This command was introduced.

reserved-vlan-map

Assigns a different VLAN ID to the reserved VLAN.

Syntax

reserved-vlan-map vlan *vlan-id* **new-vlan** *vlan-id*

no reserved-vlan-map vlan *vlan-id* **new-vlan** *vlan-id*

Command Default

The reserved VLAN ID are 4091 and 4092.

Parameters

vlan *vlan-id*

Specifies the default reserved VLAN ID.

new-vlan *vlan-id*

Specifies the new VLAN ID that you want to assign to the reserved VLAN.

Modes

Global configuration mode

Usage Guidelines

For *vlan-id*, enter a valid VLAN ID that is not already in use. Valid VLAN IDs are numbers from 1 through 4090, 4093, and 4095. VLAN ID 4094 is reserved for use by Single STP.

NOTE

You must save the configuration (**write memory**) and reload the software to place the change into effect.

The **no** form of the command resets the values back to the default reserved VLAN IDs.

Examples

The following example shows how to assign a new VLAN ID to the reserved VLAN IDs.

```
device(config)# reserved-vlan-map vlan 4091 new-vlan 10
Reload required. Please write memory and then reload or power cycle.
device(config)# write memory
device(config)# exit
device# reload
```

responder-only

Configures responder-only mode for an IKEv2 profile.

Syntax

responder-only

no responder-only

Command Default

The responder-only mode is disabled.

Modes

IKEv2 profile configuration mode

Usage Guidelines

By default responder-only mode is disabled and the device behaves as both initiator and responder so that IKEv2 negotiations start when the IKEv2 peer is reachable.

In responder-only mode, the device is passive and does not initiate negotiation or re-keying to establish an IKEv2 security association (SA).

The **no** form of the command disables responder-only mode.

Examples

The following example enables responder-only mode for an IKEv2 profile named ikev2_profile1.

```
device# configure terminal
device(config)# ikev2 profile ikev2_profile1
device(config-ike-profile-ikev2_profile1)# responder-only
```

History

Release version	Command history
08.0.50	This command was introduced.

restart-ports

Configures a VSRP-configured device to shut down its ports when a failover occurs and restart after a period of time.

Syntax

restart-ports [*seconds*]

no restart-ports *seconds*

Command Default

The default is 1 second.

Parameters

seconds

Specifies the time the VSRP master shuts down its port before it restarts. The range is from 1 through 120 seconds.

Modes

VSRP VRID configuration mode

Usage Guidelines

The VSRP fast start feature can be enabled on a VSRP-configured RUCKUS device, either on the VLAN to which the VRID of the VSRP-configured device belongs (globally) or on a port that belongs to the VRID. This command shuts down all the ports that belong to the VLAN when a failover occurs. All the ports will have the specified VRID.

The **no** form of the command resets the time to the default.

Examples

The following example configures the ports to restart in 5 seconds.

```
device(config)# vlan 100
device(config-vlan-100)# vsrp vrid 1
device(config-vlan-100-vrid-1)# restart-ports 5
```

restart-vsrp-port

Configures a single port on a VSRP-configured device to shut down when a failover occurs and restart after a period of time.

Syntax

restart-vsrp-port *seconds*

no restart-vsrp-port *seconds*

Command Default

The default is 1 second.

Parameters

seconds

Configures the VSRP master to shut down its port for the specified number of seconds before it restarts. The range is from 1 through 120 seconds.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command resets the time to the default.

Examples

The following example configures the VSRP port to restart in 5 seconds.

```
device(config)# interface ethernet 1/1/1
device(config-if-e-10000)# restart-vsrp-port 5
```

restconf config-sync

Forces configuration synchronization from the FI system to the RESTConf running configuration database.

Syntax

restconf config-sync

Modes

Global configuration mode

Examples

```
device# configure terminal
device(config)#restconf config-sync
```

History

Release version	Command history
9.0.00	This command was introduced.

restconf config-sync-interval

Configures the sync periodic interval when periodic config sync is enabled. Whenever a configuration change is detected on the system, a complete configuration sync to the RESTCONF DB is performed.

Syntax

restconf enable-config-sync *interval*

Parameters

interval

Specifies the interval in minutes. Valid values range from 5 minutes through 30 minutes. The default is 10 minutes.

Modes

Global configuration mode

Examples

```
device# conifgure terminal
device(config)#restconf config-sync-interval 5
```

Release version	Command history
9.0.00	This command was introduced.

restconf enable

Enables RESTCONF management interface.

Syntax

restconf enable

Modes

Global configuration mode

Examples

```
device# configure terminal
device(config)#restconf enable

device#show log
Syslog logging: enabled ( 0 messages dropped, 0 flushes, 0 overruns)
    Buffer logging: level ACDMEINW, 63 messages logged
    level code: A=alert C=critical D=debugging M=emergency E=error
I=informational N=notification W=warning

Static Log Buffer:
Apr 13 10:35:25:I:System: Stack unit 1   PS 1, Internal Power supply  is up

Dynamic Log Buffer (4000 lines):
Apr 14 09:30:05:I:Security: running-config was potentially changed by root
Apr 14 09:29:40:I:RESTCONF: Management Interface is Up
Apr 14 09:29:40:I:RESTCONF: Configuration sync completed
Apr 14 09:29:35:I:RESTCONF: Configuration sync started
Apr 14 09:29:31:I:RESTCONF: Initialization in-progress
```

History

Release version	Command history
9.0.00	This command was introduced.

restconf enable-config-sync

Synchronizes restconf database after a conf-sync-interval time is performed.

Syntax

restconf enable-config-sync

Modes

Global configuration mode

Examples

```
device# configure terminal
device(config)#restconf enable-config-sync
```

Release version	Command history
9.0.00	This command was introduced.

restricted-vlan

Configures a specific VLAN as the restricted VLAN for all ports on the device to place the client port when the authentication fails.

Syntax

restricted-vlan *vlan-id*

no restricted-vlan *vlan-id*

Command Default

The restricted VLAN is not configured.

Parameters

vlan-id

Specifies the identification number of the restricted VLAN.

Modes

Authentication configuration mode

Usage Guidelines

When an authentication fails, the port can be moved into a configured restricted VLAN instead of blocking the client completely. The port is moved to the configured restricted VLAN only if the authentication failure action is set to place the port in a restricted VLAN using the **auth-fail-action** command at the global level or using the **authentication fail-action** command at the interface level. Else, when the authentication fails, the client's MAC address is blocked in the hardware (default action).

The **no** form of the command disables the restricted VLAN.

Examples

The following example creates a restricted VLAN with VLAN 4.

```
device(config)# authentication
device(config-authen)# restricted-vlan 4
```

History

Release version	Command history
08.0.20	This command was introduced.

reverse-manifest-enable

Enables the system backup to USB operation to be carried on the system.

Syntax

reverse-manifest-enable

no reverse-manifest-enable

Modes

Global configuration mode

Usage Guidelines

To initiate system backup to USB, you must plug in the USB drive when the system is up and running, and press and hold the USB mode button for 10 seconds.

The **no** form of the command disables system backup operation.

Examples

The following example enables system backup to USB.

```
device(config)# reverse-manifest-enable
```

History

Release version	Command history
08.0.70	This command was introduced.

reverse-path-check

Enables uRPF for all Layer 3 routes.

Syntax

reverse-path-check

no reverse-path-check

Command Default

Reverse path check is not enabled on the device.

Modes

Global configuration mode

Usage Guidelines

On ICX devices, this command enables the uRPF command line interface and hardware settings.

You must reload the device for the reverse path check setting changes to take effect. Enabling reverse path check on ICX devices reduces the following system-max values by half:

- ip-route
- ip6-route
- ip-route-default-vrf
- ip6-route-default-vrf
- ip-route-vrf
- ip6-route-vrf

You should configure these values after reloading. You should adjust or remove the max-route configuration in VRFs before reload.

The **no** form of the command disables the reverse path check functionality.

NOTE
Disabling reverse path check doubles the system-max values on ICX devices.

Examples

The following example enables unicast Reverse Path Forwarding globally.

```
device(config)# reverse-path-check
```

History

Release version	Command history
08.0.30	This command was introduced.

Release version	Command history
08.0.40	Removed reference to ICX 6610 devices.

revocation-check (PKI)

Specifies the method to be used for certificate revocation checks.

Syntax

revocation-check { **crl** | **ocsp** | **none** }

no revocation-chec k { **crl** | **ocsp** | **none** }

Command Default

revocation-check none

Parameters

crl

Sets the revocation check method to Certificate Revocation List (CRL).

ocsp

Sets the revocation check method to Online Certificate Status Protocol (OCSP).

none

Designates that no revocation check is to be done. This is the default.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The no form of the command removes the configuration.

Examples

The following example sets the revocation check method for trustpoint abcd to Online Certificate Status Protocol (OCSP).

```
device# configure terminal
device(config)# pki trustpoint abcd
device(config-pki-trustpoint-abcd)# ocsp http post
device(config-pki-trustpoint-abcd)# revocation-check ocsp
device(config-pki-trustpoint-abcd)# ocsp-url http://10.21.40.39:2560
device(config-pki-trustpoint-abcd)# fingerprint 3C:EA:EC:E6:F1:DD:3B:86:65:DE:58:F4:A2:75:D8:63:6D:
23:68:40
device(config-pki-trustpoint-abcd)# exit
```

History

Release version	Command history
08.0.70	This command was introduced.

rfc1583-compatibility (OSPF)

Configures compatibility with RFC 1583.

Syntax

rfc1583-compatibility

no rfc1583-compatibility

Command Default

OSPF is compatible with RFC 1583 (OSPFv2).

Modes

OSPF router configuration mode

OSPF router VRF configuration mode

Usage Guidelines

OSPF is compatible with RFC 1583 (OSPFv2) and maintains a single best route to an autonomous system (AS) boundary router in the OSPF routing table. Disabling this compatibility causes the OSPF routing table to maintain multiple intra-AS paths, which helps prevent routing loops.

Enter **no rfc1583-compatibility** to disable compatibility with RFC 1583.

Examples

The following example disables compatibility with RFC 1583.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# no rfc1583-compatibility
```

ring-interfaces

Configures the primary and secondary interfaces for the ring to control outward traffic flow.

Syntax

ring-interfaces { **ethernet** *unit/slot/port* | **lag** *lag-id* } { **ethernet** *unit/slot/port* | **lag** *lag-id* }

no ring-interfaces { **ethernet** *unit/slot/port* | **lag** *lag-id* } { **ethernet** *unit/slot/port* | **lag** *lag-id* }

Command Default

The primary and secondary interfaces are not configured.

Parameters

ethernet *unit/slot/port*

Configures the primary and secondary interfaces.

lag *lag-id*

Specifies the LAG virtual interface.

Modes

MRP configuration mode

Usage Guidelines

On the master node, the primary interface is the one that originates Ring Health Packets (RHPs). Ring control traffic and Layer 2 data traffic will flow in the outward direction from this interface by default. On member nodes, the direction of traffic flow depends on the traffic direction selected by the master node. Therefore, on a member node, the order in which you enter the interfaces does not matter.

The **no** form of the command clears the primary and secondary interfaces.

Examples

The following example shows how to configure the primary and secondary interfaces on a ring.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-2)# ring-interface ethernet 1/1/1 ethernet 1/1/2
```

The following example shows how to configure the LAG virtual interfaces on a ring.

```
device(config)# vlan 2
device(config-vlan-2)# metro-ring 1
device(config-vlan-2-mrp-2)# ring-interface lag 1 lag 2
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

rmon alarm

Configures an Remote Monitoring (RMON) alarm.

Syntax

rmon alarm *alarm-num mib-object sample-interval* { **absolute** | **delta** } **falling-threshold** *falling-threshold-value event* **rising-threshold** *rising-threshold-value event* **owner** *alarm-owner*

no rmon alarm *alarm-num mib-object sample-interval* { **absolute** | **delta** } **falling-threshold** *falling-threshold-value event* **rising-threshold** *rising-threshold-value event* **owner** *alarm-owner*

Command Default

An RMON alarm is not configured.

Parameters

alarm-num
: Specifies the alarm number. The value can range from 1 to 65535.

mib-object
: Specifies the MIB object to monitor.

sample-interval
: Specifies the sample interval.

absolute
: Configures testing each sample directly.

delta
: Configures testing the delta between the samples.

falling-threshold
: Configures the falling threshold.

falling-threshold-value
: Specifies the faliing threshold value. The value can range from 0 to 2147483647.

event
: Specifies the action (event) to take to fire when the falling threshold crosses the configured value. The value can range from 1 through 65535.

rising-threshold
: Configures the rising threshold.

rising-threshold-value
: Specifies the threshold value. The value can range from 0 to 2147483647.

event
: Specifies the event to fire when the rising threshold crosses the configured value. The value can range from 1 through 65535.

owner *alarm-owner*
: Specifies the alarm owner.

Modes

Global configuration mode

Usage Guidelines

An Alarm is designed to monitor configured thresholds for any SNMP integer, time tick, gauge, or counter MIB object. Using the CLI, you can define what MIB objects are monitored, the type of thresholds that are monitored (falling, rising, or both), the value of those thresholds, and the sample type (absolute or delta).

An alarm event is reported each time that a threshold is exceeded. The alarm entry also indicates the action (event) to be taken if the threshold be exceeded.

You can configure both the falling threshold and the rising threshold and in any order.

The **no** form of the command removes the configured RMON alarm.

Examples

The following example configures an alarm.

```
device(config)# rmon alarm 1 ifInOctets.6 10 delta rising-threshold 100 1 falling-threshold 50 1 owner
nyc02
```

History

Release version	Command history
09.0.00	The command was deprecated.
09.0.10c	Support for the command was restored.

rmon event

Defines the action to be taken when an alarm is reported and collects and stores reported events for retrieval by an Remote Monitoring (RMON) application.

Syntax

rmon event *event-entry* **description** *event-description* { { **execute** *batch_id* | **log-and-execute** *batch_id* | **log-trap-and-execute** *community_string batch_id* | **trap-and-execute** *community_string batch_id* } [**argument** *string*] | **log** | **trap** *community_string* | **log-and-trap** *community_string* } **owner** *event-owner*

no rmon event *event-entry* **description** *event-description* { { **execute** *batch_id* | **log-and-execute** *batch_id* | **log-trap-and-execute** *community_string batch_id* | **trap-and-execute** *community_string batch_id* } [**argument** *string*] | **log** | **trap** *community_string* | **log-and-trap** *community_string* } **owner** *event-owner*

Command Default

An RMON event is not configured.

Parameters

event-entry
Specifies the event number.

description *event-description*
Configures the event description.

execute *batch_id*
Executes listed batch command arguments in CLI privilege mode and stores related output in the log file when the event fires.

log-and-execute *batch_id*
Generates an RMON log and execute batch command when the event fires.

log-trap-and-execute *community_string batch_id*
Generates an RMON log and SNMP trap and executes a batch command when the event fires.

trap-and-execute *community_string batch_id*
Generates an SNMP trap and executes a batch command when the event fires.

argument *string*
Specifies the batch command argument. ASCII string in the format "cmd1;cmd2;cmd3".

log
Generates an RMON log that is included in the **show rmon log** command output when the event fires.

trap *community_string*
Generates an SNMP trap when the event fires.

log-and-trap *community_string*
Generates an RMON log and SNMP trap when the event fires.

owner *event-owner*
Specifies the batch command owner.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the configured RMON event.

There are two elements to the Event Group: the event control table and the event log table. The event control table defines the action to be taken when an alarm is reported. Defined events can be found by entering the CLI command **show event**. The event log table collects and stores reported events for retrieval by an RMON application.

Use the following command to display output from command execution that has been stored in the log:

```
device# show log debug management rmond_event all
```

Examples

The following examples configure an RMON event.

```
device(config)# rmon event 1 description 'testing a longer string' trap cmty1 owner nyc02
```

```
device(config)# rmon event 1 description "event1" execute 1 argument
 "show flash;conf t;show ip addr; hostname ruckus; show rmon event" owner ICX
```

History

Release version	Command history
09.0.00	The command was deprecated.
09.0.10c	Support for the command was restored.

rmon history

Configures an RMON history control.

Syntax

rmon history *entry-number* **interface** { **ethernet** *stack-id/slot/port* | **management** *number* } **buckets** *number* **interval** *sampling-interval***owner** *owner-name*

no rmon history *entry-number* **interface** { **ethernet** *stack-id/slot/port* | **management** *number* } **buckets** *number* **interval** *sampling-interval* **owner** *owner-name*

Command Default

All active ports will generate two history control data entries per active Layer 2 switch port or Layer 3 switch interface.

Parameters

entry-number
Specifies the history number. The value can range from 1 to 65535.

interface ethernet *stack-id/slot/port*
Specifies the Ethernet interface to monitor.

interface management *number*
Specifies the management interface to monitor.

buckets *number*
Specifies the number of buckets. The value can range from 1 to 65535.

interval *sampling-interval*
Specifies the sample interval. The value can range from 1 to 3600.

owner *owner-name*
Specifies the history owner.

Modes

Global configuration mode

Usage Guidelines

An active port is defined as one with a link up. If the link goes down, the two entries are automatically deleted.

Two history entries are generated for each device:

- A sampling of statistics every 30 seconds
- A sampling of statistics every 30 minutes

The history data can be accessed and displayed using any of the popular RMON applications.

The **no** form of the command removes the configured RMON history control.

Examples

The following example configures the RMON history.

```
device(config)# rmon history 1 interface ethernet 1/1/1 buckets 10 interval 10 owner nyc02
```

History

Release version	Command history
09.0.00	The command was deprecated.
09.0.10c	Support for the command was restored.

route-only

Enables RUCKUS Layer 3 switches to support Layer 2 switching.

Syntax

route-only

no route-only

Command Default

By default, RUCKUS Layer 3 switches support Layer 2 switching.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

By default, RUCKUS Layer 3 switches support Layer 2 switching. These devices modify the routing protocols that are not supported on the devices. If you want to disable Layer 2 switching, you can do so globally or on individual ports, depending on the version of software your device is running.

Enabling or disabling Layer 2 switching is supported in Layer 3 software images only. Enabling or disabling Layer 2 switching is not supported on virtual interfaces.

The **no** form of the command enables Layer 2 switching on a Layer 3 switch.

To disable Layer 2 switching only on a specific interface, go to the interface configuration level for that interface, and then configure the command.

Examples

The following example globally disables Layer 2 switching on a Layer 3 switch.

```
device(config)# route-only
device(config)# exit
device# write memory
device# reload
```

The following example enables Layer 2 switching on a Layer 3 switch.

```
device(config)# no route-only
device(config)# exit
device# write memory
device# reload
```

The following example disables Layer 2 switching on Ethernet interface 1/1/1.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# route-only
device(config-if-e1000-1/1/1)# end
device# write memory
device# reload
```

route-precedence

Configures a table that defines the order (precedence) in which multicast routes are selected from the multicast routing table (mRTM) and unicast routing (uRTM) table.

Syntax

route-precedence { [**mc-non-default** | **none**] | [**mc-default** | **none**] | [**uc-non-default** | **none**] | [**uc-default** | **none**] }

no route-precedence

Command Default

The default route precedence used to select routes is:

1. A non-default multicast route from the mRTM (**mc-non-default**).
2. A default multicast route from the mRTM (**mc-default**).
3. A non-default unicast route from the uRTM (**uc-non-default**).
4. A default unicast route from the uRTM (**uc-non-default**).

Parameters

mc-non-default
Specifies the precedence for the non-default multicast route table (mRTM).

none
Specifies that this type of route is to be ignored. You can specify this option for any of the multicast or unicast route types.

mc-default
Specifies the precedence for the multicast routing table (mRTM).

uc-non-default
Specifies the precedence for the non-default unicast route table (uRTM).

uc-default
Specifies the precedence for the default unicast route table (uRTM).

Modes

Router PIM configuration mode

Usage Guidelines

The order in which you place the keywords determines the route precedence.

The **no** form of this command restores the default route precedence settings.

You must configure four parameters indicating the four different route types. If you want to specify that a particular route type is not used, configure the **none** keyword to fill the precedence table.

Examples

The following example configures a route precedence in which a non-default multicast route has the highest precedence, and a default unicast route has the lowest precedence. The order used to select routes is:

1. A non-default multicast route from the mRTM.
2. A non-default unicast route from the uRTM.
3. A default multicast route from the mRTM.
4. A default unicast route from the uRTM.

```
device(config)# router pim
device(config-pim-router)# route-precedence mc-non-default uc-non-default mc-default uc-default
```

The following example configures a route precedence in which the unicast default route is ignored. The order used to select routes is:

1. A non-default multicast route from the mRTM.
2. A default multicast route from the mRTM.
3. A non-default unicast route from the uRTM.

```
device(config)# router pim
device(config-pim-router)# route-precedence mc-non-default mc-default uc-non-default none
```

History

Release version	Command history
08.0.10a	This command was introduced.

route-precedence admin-distance

Configures route precedence so that multicast routes are selected from the best route in the multicast routing table (mRTM) and unicast routing (uRTM) table.

Syntax

route-precedence admin-distance

no route-precedence admin-distance

Command Default

Multicast routes are not selected from the best route in the mRTM and uRTM. Routes are selected based on:

- The route precedence configured using the **route-precedence** command.
- The system route precedence default (if route precedence has not been configured using the **route-precedence** command.

the default route precedence settings.

Modes

PIM configuration mode

Usage Guidelines

The **no** form of this command restores the previous route precedence settings.

If the mRTM and the uRTM have routes of equal cost, the route from the mRTM is preferred.

Examples

The following example configures route precedence so that the best multicast route from the mRTM and uRTM tables is selected.

```
Device(config)# router pim
Device(config-pim-router)# route-precedence admin-distance
```

History

Release version	Command history
08.0.10a	This command was introduced.

router bgp

Enables BGP routing.

Syntax

router bgp

no router bgp

Command Default

BGP routing is not enabled.

Modes

Global configuration mode

Usage Guidelines

RUCKUS ICX 8200 devices do not support BGP.

The **no** form of the command disables BGP routing.

Examples

The following example enables BGP routing.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)#
```

router msdp

Enables multicast source discovery protocol (MSDP) on a router.

Syntax

router msdp [**vrf** *vrf-name*]

Command Default

MSDP is not enabled.

Parameters

vrf *vrf-name*

Specifies a virtual routing and forwarding (VRF) instance.

Modes

Global configuration mode

Usage Guidelines

When you configure the **no router msdp vrf** *vrf-name* command, the MSDP configuration is removed only from the specified VRF.

The PIM Sparse Rendezvous Point (RP) is also an MSDP peer.

Devices that run MSDP usually also run BGP. The source address used by the MSDP device is normally configured to be the same source address used by BGP.

All MSDP parameters available for the default router instance are configurable for a VRF-based MSDP instance.

Examples

The following example enables MSDP.

```
Device(config)# router msdp
```

The following example enables MSDP on a VRF named blue.

```
Device(config)# router msdp vrf blue
```

The following example removes the MSDP configuration only from the VRF named blue.

```
Device(config-msdp-router-vrf-blue)# no router msdp vrf blue
```

router ospf

Enables and configures the Open Shortest Path First version 2 (OSPFv2) routing protocol.

Syntax

router ospf [**vrf** *name*]

no router ospf

Parameters

vrf *name*

Specifies a nondefault VRF.

Modes

Global configuration mode

Usage Guidelines

Use this command to enable the OSPFv2 routing protocol and enter OSPF router or OSPF router VRFconfiguration mode. OSPFv2 maintains multiple instances of the routing protocol to exchange route information among various VRF instances.

The **no** form of the command deletes all current OSPF configuration and blocks any further OSPFv2 configuration.

Examples

The following example enables OSPFv2 on a default VRF and enters OSPF VRF router configuration mode.

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)#
```

router pim

Configures basic global Protocol Independent Multicast (PIM) Sparse parameters on a device within the PIM Sparse domain and enters PIM-router configuration mode.

Syntax

router pim [**vrf** *vrf-name*]

no router pim [**vrf** *vrf-name*]

Command Default

PIM Sparse is not configured.

Parameters

vrf *vrf-name*

Specifies a non-default virtual routing and forwarding (VRF) instance.

Modes

Global configuration mode

Interface configuration mode

Usage Guidelines

You do not need to globally enable IP multicast routing when configuring PIM Sparse.

After you enable IP multicast routing and PIM Sparse at the global level, you must enable it on the individual interfaces connected to the PIM Sparse network.

If you configure PIM Sparse on an interface that is on the border of the PIM Sparse domain, you also must also configure the **ip pim border** command on the interface.

You must configure the **bsr-candidate ethernet** command to identify an interface on at least one device as a candidate PIM Sparse Bootstrap Router (BSR) and candidate PIM Sparse rendezvous point (RP).

You can configure the **rp-address** command to explicitly identify an RP, including an ACL-based RP, by its IP address instead of having it identified by the RP election process.

Entering the **router pim vrf** command to enable PIM does not require a software reload.

All PIM parameters available for the default router instance are configurable for a VRF-based PIM instance.

The **no** form of the command disables PIM and removes all configuration for PIM multicast on the device (**router pim** level) only. Using the **no router pimvrf** *vrf-name* command removes all configuration for PIM multicast on the specified VRF.

Examples

The following example configures basic global PIM Sparse parameters.

```
device# configure terminal
device(config)# router pim
```

The following example configures PIM Sparse for a non-default VRF instance.

```
device# configure terminal
device(config)# router pim vrf blue
```

router rip

Enables Routing Information Protocol (RIP) globally on the device. Does not enable RIP at the interface level.

Syntax

router rip

no router rip

Command Default

By default, RIP is not enabled on the device.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables RIP on the device.

Once you have enabled RIP on the device, you must also configure RIP on each RIP interface. Refer to the **ip rip** command for more information.

Examples

The following example enables RIP on a device.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)#
```

router vrrp

Globally enables Virtual Router Redundancy Protocol (VRRP).

Syntax

router vrrp

no router vrrp

Command Default

VRRP is not globally enabled.

Modes

Global configuration mode

Usage Guidelines

After globally enabling VRRP, the command prompt does not change. Nearly all subsequent VRRP configuration is performed at the interface level, but VRRP must be enabled globally before configuring VRRP instances.

The **no router vrrp** command disables VRRP globally.

Examples

The following example globally enables VRRP and enters interface configuration mode.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/5
```

router vrrp-extended

Globally enables Virtual Router Redundancy Protocol Extended (VRRP-E) and enters VRRP-E router configuration mode.

Syntax

router vrrp-extended

no router vrrp-extended

Command Default

VRRP-E is not globally enabled.

Modes

Global configuration mode

Usage Guidelines

After globally enabling VRRP-E, nearly all subsequent VRRP-E configuration is performed at the interface level. VRRP-E must be enabled globally before configuring VRRP-E instances.

The **no router vrrp-extended** command globally disables VRRP-E.

Examples

The following example globally enables VRRP-E and enters interface configuration mode.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# interface ethernet 1/1/5
device(config-if-e1000-1/1/5)# ip address 10.53.5.3/24
device(config-if-e1000-1/1/5)# ip vrrp-extended vrid 1
device(config-if-e1000-1/1/5-vrid-1)# backup priority 110
device(config-if-e1000-1/1/5-vrid-1)# version 2
device(config-if-e1000-1/1/5-vrid-1)# ip-address 10.53.5.254
device(config-if-e1000-1/1/5-vrid-1)# activate
VRRP-E router 1 for this interface is activating
```

router vsrp

Enables the Virtual Switch Redundancy Protocol (VSRP) on Layer 2 or Layer 3 switches.

Syntax

router vsrp

no router vsrp

Command Default

By default, VSRP is enabled on Layer 2 and Layer 3 switches.

Modes

Global configuration mode

Usage Guidelines

On a Layer 3 switch, if you want to use VRRP or VRRP-E for Layer 3 redundancy instead of VSRP, you must disable VSRP first. Because VRRP and VRRP-E do not apply to Layer 2 switches, there is no need to disable VSRP and there is no command to do so. VSRP is always enabled on Layer 2 switches.

The **no** form of the command disables VSRP.

Examples

The following example shows how to disable VSRP and then enable it.

```
device(config)# no router vsrp
device(config)# router vsrp
```

rp-address

Configures a device interface as a rendezvous point (RP).

Syntax

rp-address { *ip-address* | *ipv6-address* } *acl_name_or_id*

no rp-address { *ip-address* | *ipv6-address* }

Command Default

The RP is selected by the PIM Sparse protocol's RP election process.

Parameters

ip-address
: Specifies the IP address of the RP.

ipv6-address
: Specifies the IPv6 address of the RP.

acl_name_or_id
: Specifies the name or ID of the ACL that specifies which multicast groups use the RP.

Modes

Router PIM configuration mode

VRF configuration mode

Usage Guidelines

The **no** form of this command restores the default and the RP is selected by the RP election process.

Devices in the PIM Sparse domain use the specified RP and ignore group-to-RP mappings received from the bootstrap router (BSR).

The RP is the meeting point for PIM Sparse sources and receivers. A PIM Sparse domain can have multiple RPs, but each PIM Sparse multicast group address can have only one active RP. PIM Sparse routers learn the addresses of RPs and the groups for which they are responsible from messages that the BSR sends to each of the PIM Sparse routers.

NOTE
Specify the same IP or IPv6 address as the RP on all PIM Sparse devices within the PIM Sparse domain. Make sure the device is on the backbone or is otherwise well connected to the rest of the network.

Examples

This example configures the device interface at IP address 207.95.7.1 as the RP for the PIM Sparse domain.

```
device(config)# router pim
device(config-pim-router)# rp-address 207.95.7.1
```

This example configures an ACL named acl1 to specify which multicast groups use the RP.

```
device(config)# router pim
device(config-pim-router)# rp-address 130.1.1.1 acl1
```

This example configures an RP for a VRF named blue.

```
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# rp-address 31::207
```

rp-adv-interval

Configures the interval at which the candidate rendezvous point (RP) configured on the device sends candidate-RP advertisement messages to the bootstrap router (BSR).

Syntax

rp-adv-interval *seconds*

no rp-adv-interval *seconds*

Command Default

The device sends candidate-RP advertisement messages every 60 seconds.

Parameters

seconds

Specifies the interval, in seconds, between advertisement messages. The range is 10 through 65535 seconds. The default is 60 seconds.

Modes

PIM router configuration mode

PIM router VRF configuration mode

Usage Guidelines

The **no** form of this command restores the candidate-RP advertisement-message interval to 60 seconds.

Examples

The following example configures the candidate-RP advertisement-message interval to 90 seconds.

```
device(config)# router pim
device(config-pim-router)# rp-adv-interval 90
```

The following example configures, on a VRF named blue, the candidate-RP advertisement-message interval to 90 seconds.

```
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# rp-adv-interval 90
```

rp-candidate

Configures a device as a candidate rendezvous point (RP) for all multicast groups with the prefix 224.0.0.0/4, by default, and explicitly adds or deletes groups with other prefixes.

Syntax

rp-candidate { **ethernet** *stackid* / *slot* / *portnum* | **loopback** *num* | **ve** *num* | **tunnel** *num* }

rp-candidate {**add** | **delete** } *group-addr mask-bits*

no rp-candidate { **ethernet** *stackid* / *slot* / *portnum* | **loopback** *num* | **ve** *num* | **tunnel** *num* }

no rp-candidate {**add** | **delete** } *group-addr mask-bits*

Command Default

The PIM router is not available for selection as an RP.

Parameters

ethernet *stackid/slot/portnum*
Specifies a physical interface for the candidate RP. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

loopback *num*
Specifies a loopback interface for the candidate RP.

ve *num*
Specifies a virtual interface for the candidate RP.

tunnel *num*
Specifies a GRE tunnel interface for the candidate RP.

add
Specifies adding a group address or range of group addresses to the default group configured by the those the device is the candidate RP for by default, that is, groups with the prefix 224.0.0.0/4.

delete
Specifies deleting a group address or range of group addresses, that were added using the **add** keyword.

group-addr mask-bits
Specifies the group address and the number of significant bits in the subnet mask.

Modes

Router PIM configuration mode

Usage Guidelines

The **no rp-candidate** command makes the PIM router cease to act as a candidate RP.

The **no rp-candidate add** command deletes a group address or range of group addresses that were added using the **add** keyword.

Configuring the **rp-candidate** command on an Ethernet, loopback, virtual, or tunnel interface, configures the device as a candidate RP for all multicast groups with the prefix 224.0.0.0/4, by default. You can configure the **rp-candidate add** command to add to those a group address or range of group addresses. You can configure the **rp-candidate delete** command to delete a group address or range of group addresses that were added to the default addresses.

NOTE
You cannot delete the default group prefix.

The RP is the meeting point for PIM Sparse sources and receivers. A PIM Sparse domain can have multiple RPs, but each PIM Sparse multicast group address can have only one active RP. PIM Sparse routers learn the addresses of RPs and the groups for which they are responsible from messages that the bootstrap router (BSR) sends to each of the PIM Sparse routers.

Although you can configure the device as only a candidate BSR or an RP, it is recommended that you configure the same interface on the same device as both a BSR and an RP.

NOTE
Specify the same IPv6 address as the RP on all IPv6 PIM Sparse routers within the IPv6 PIM Sparse domain. Make sure the device is on the backbone or is otherwise well connected to the rest of the network. You can configure the **rp-address** command to specify the RP address.

Examples

This example configures a physical device as a candidate RP.

```
device(config)# router pim
device(config-pim-router)# rp-candidate ethernet 1/2/2
```

This example uses a loopback interface to configure a device as a candidate RP.

```
device(config)# router pim
device(config-pim-router)# rp-candidate loopback 1
```

This example uses a virtual interface to configure a device as a candidate RP.

```
device(config)# router pim
device(config-pim-router)# rp-candidate ve 120
```

This example configures an address group to the devices for which it is a candidate RP.

```
device(config)# router pim
device(config-pim-router)# rp-candidate add 224.126.0.0 16
```

This example deletes an address group from the devices for which it is a candidate RP.

```
device(config)# router pim
device(config-pim-router)# rp-candidate delete 224.126.22.0 24
```

History

Release version	Command history
08.0.20	This command was modified to add the **tunnel** keyword.

rp-embedded

Configures embedded-rendezvous point (RP) support on PIM devices.

Syntax

rp-embedded

no rp-embedded

Command Default

Embedded RP support is enabled.

Modes

PIM router configuration mode

PIM router VRF configuration mode

Usage Guidelines

The **no** form of this command disables embedded RP support.

Examples

This example disables embedded RP support.

```
Device(config)# ipv6 router pim
Device(config-ipv6-pim-router)#no rp-embedded
```

This example disables embedded RP support on a VRF named blue.

```
Device(config)#ipv6 router pim vrf blue
Device(config-ipv6-pim-router-vrf-blue)#no rp-embedded
```

rpf-mode

Enables strict or loose unicast Reverse Path Forwarding (uRPF) mode on FastIron ICX devices.

Syntax

rpf-mode [**strict** [**urpf-exclude-default**] | **loose** [**urpf-exclude-default**]]

no rpf-mode [**strict** [**urpf-exclude-default**] | **loose** [**urpf-exclude-default**]]

Command Default

uRPF mode is not enabled.

Parameters

strict

Specifies uRPF strict mode.

loose

Specifies uRPF loose mode. This mode allows all packets to pass the uRPF check.

urpf-exclude-default

Excludes the default route for uRPF source IP lookup.

Modes

Interface configuration mode

Usage Guidelines

You must enable uRPF at the global level before enabling the mode (strict or loose). This command is applicable only to the Layer 3 physical interface and Layer 3 VE interfaces.

The **loose** option allows all packets to pass through. Choose the **loose** option along with the **urp-exclude-default** option to subject the packets to uRPF check.

The **no** form of the command disables uRPF mode.

Examples

The following example sets the Reverse Path Forwarding mode to strict mode.

```
device(config)# interface ethernet 1/1/3
device(config-if-e1/1/3)# rpf-mode strict
```

History

Release version	Command history
08.0.30	This command was introduced.

rsakeypair (PKI)

Specifies which RSA keypair to use during enrollment.

Syntax

rsakeypair key-label *key_name*

no rsakeypair key-label *key_name*

Parameters

key-label *key_name*

Designates the RSA key to be used for enrollment.

Modes

PKI trustpoint configuration sub-mode

Usage Guidelines

The **crypto key generate rsa** command is used to create and name an RSA keypair.

The **no** form of the command removes the configuration.

Examples

The following example creates a trustpoint named trust1 and configures it to use the RSA keypair rsakeyAuto.

```
device# configure terminal
device(config)# pki trustpoint trust1
device(config-pki-trustpoint-trust1)# rsakeypair key-label rsakeyAuto
```

History

Release version	Command history
08.0.70	This command was introduced.

rspan destination

Configures a Remote Switched Port Analyzer (RSPAN) destination port for port mirroring.

Syntax

rspan destination ethernet *unit/slot/port*

no rspan destination ethernet *unit/slot/port*

Command Default

No RSPAN destination port is configured.

Parameters

ethernet *unit/slot/port*

Specifies the Ethernet interface and the interface ID in the unit/slot/port format.

Modes

RSPAN configuration mode

Usage Guidelines

The configured VLAN must not be a user VLAN. The destination Interface must be a member port for the RSPAN VLAN.

The **no** form of the command deletes the port mirroring destination port for the specified interface.

Examples

The following example configures Ethernet interface 1/1/2 as an RSPAN destination port for a switch.

```
device# configure terminal
device(config)# rspan-vlan 4000
device(config-rspan-vlan)# tagged ethernet 1/1/2
device(config-rspan-vlan)# rspan destination ethernet 1/1/2
```

History

Release version	Command history
08.0.80	This command was introduced.
09.0.00	The **lag** keyword was removed.

rspan source

Configures a Remote Switched Port Analyzer (RSPAN) source port and properties for port mirroring.

Syntax

rspan source { **monitor-both** | **monitor-in** | **monitor-out** } { **ethernet** *unit/slot/port* | **lag** *lag-id* }

no rspan source { **monitor-both** | **monitor-in** | **monitor-out** } { **ethernet** *unit/slot/port* | **lag** *lag-id* }

Command Default

No RSPAN source port is configured.

Parameters

monitor-both
Specifies ingress and egress traffic.

monitor-in
Specifies ingress traffic only.

monitor-out
Specifies egress traffic only.

ethernet *unit/slot/port*
Specifies the Ethernet interface and the interface ID in the unit/slot/port format.

lag *lag-id*
Specifies the LAG virtual interface.

Modes

RSPAN configuration mode

Usage Guidelines

The configured VLAN must not be a user VLAN. This command can be successfully executed only if an RSPAN destination port is configured. RSPAN must be configured on all the switches participating in the RSPAN session.

The **no** form of the command deletes the port mirroring source port for the specified interface.

Examples

The following example configures an Ethernet interface as an RSPAN source port and specifies that ingress traffic is monitored for a device.

```
device# configure terminal
device(config)# rspan-vlan 4000
device(config-rspan-vlan)# tagged ethernet 1/1/2
device(config-rspan-vlan)# rspan source monitor-in ethernet 1/1/1
```

History

Release version	Command history
08.0.80	This command was introduced.

rspan-transit-vlan

Allows intermediate switches to forward mirrored traffic from multiple access switches with different RSPAN VLANs

Syntax

rspan-transit-vlan { *vlan-id* }

no rspan-transit-vlan { *vlan-id* }

Parameters

vlan-id

Number that identifies the RSPAN transit VLAN.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the VLAN.

The **rspan-transit-vlan** command is needed only in the following cases:

- On intermediate switches where the user needs to configure multiple RSPAN transit VLANs , as it is not possible to configure multiple RSPAN VLANs on a switch
- For topologies where the user does not want to enable MAC learning on transient VLANs for intermediate switches.

The **rspan-transit-vlan** command creates a transit VLAN that forwards RSPAN mirrored traffic from access switches, and MAC learning is disabled on the VLAN.

Examples

The following example configures access Router 1 and Router 2 for RSPAN. Both Router 1 and Router 2 are configured to filter out mirrored traffic on VLANs 100 through 108. The example configures an intermediate Router 3 with RSPAN transit VLANs that are the same VLANs configured for RSPAN on Router 1 and Router 2 (VLANs 191 and 197).

```
device# configure terminal <-Configure R1 RSPAN
device(config)# rspan-vlan 191
device(config-rspan-vlan-191)# tagged ethernet 1/2/1
device(config-rspan-vlan-191)# rspan destination ethernet 1/2/1
device(config-rspan-vlan-191)# rspan source monitor-in ethernet 1/1/1 ethernet 2/1/1
device(config-rspan-vlan-191)# exit

device(config)# mirror-filter source vlan 100 to 108 VLANs filtered (R1)
device(config)# exit

device# show vlan brief ethernet 1/1/1 <-Verify R1 VLANs
Port 1/1/1 is a member of 11 VLANs
VLANs 100 to 110
Untagged VLAN   :
Tagged   VLANs  : 100 to 110
device# show vlan brief ethernet 2/1/1
Port 2/1/1 is a member of 10 VLANs
VLANs 3000 to 3009
Untagged VLAN   :
Tagged   VLANs  : 3000 to 3009

device# configure terminal <-Configure R2 RSPAN
device(config)# rspan-vlan 197
device(config-rspan-vlan-197)# tagged ethernet 2/2/1
device(config-rspan-vlan-197)# rspan destination ethernet 2/2/1
device(config-rspan-vlan-197)# rspan source monitor-in ethernet 1/1/2 ethernet 2/1/2
device(config-rspan-vlan-197)# exit

device(config)# mirror-filter source vlan 100 to 108 <-VLANs filtered (R2)
device(config)# exit

device# show vlan brief ethernet 1/1/2 <-Verify R2 VLAN members
Port 1/1/2 is a member of 11 VLANs
VLANs 100 to 110
Untagged VLAN   :
Tagged   VLANs  : 100 to 110

device# show vlan brief ethernet 2/1/2
Port 2/1/2 is a member of 10 VLANs
VLANs 3000 to 3009
Untagged VLAN   :
Tagged   VLANs  : 3000 to 3009

device# configure terminal <-Configure intermediate R3 RSPAN transit VLANs
device(config)# rspan-transit-vlan 191
device(config-rspan-transit-vlan-191)# tagged ethernet 1/2/1 ethernet 1/1/19
device(config-rspan-transit-191)# exit
device(config)# rspan-transit-vlan 197
device(config-rspan-transit-vlan-197)# tagged ethernet 2/2/1 ethernet 1/1/19
device(config-rspan-transit-vlan-197)# end
```

History

Release version	Command history
08.0.90k	This command was introduced.

rspan-vlan

Configures the VLAN to support Remote Switched Port Analyzer (RSPAN) traffic analysis.

Syntax

rspan-vlan *vlan-id*

no rspan-vlan *vlan-id*

Command Default

RSPAN traffic analysis is not supported for the VLAN.

Parameters

vlan-id

Specifies the VLAN ID.

Modes

Global configuration mode

Usage Guidelines

The VLAN must not be a user VLAN.

The **no** form of the command deletes RSPAN for the VLAN.

Examples

The following example configures VLAN 4000 to support RSPAN.

```
device# configure terminal
device(config)# rspan-vlan 4000
```

History

Release version	Command history
08.0.80	This command was introduced.

sa-filter

Configures filters for incoming and outgoing Source-Active (SA) messages from and to multicast source discovery protocol (MSDP) neighbors.

Syntax

sa-filter{**in**|**out**}*ip-addr*[**route-map***map-tag*[**rp-route-map***rp-map-tag*]]

no sa-filter{**in**|**out**}*ip-addr*[**route-map***map-tag*[**rp-route-map***rp-map-tag*]]

sa-filteroriginate[**route-map***map-tag*]

no sa-filteroriginate[**route-map***map-tag*]

Command Default

Source-Active filters are not configured.

Parameters

in
Specifies filtering incoming SA messages.

out
Specifies filtering self-originated and forwarded outbound SA messages.

ip-addr
specifies the IP address of the MSDP neighbor that the filtered SA messages are sent to of received from.

originate
Specifies filtering self-originated outbound SA messages.

route-map*map-tag*
Specifies a route map. The device applies the filter to source-group pairs that match the route map.

rp-route-map*rp-map-tag*
Specifies a route map to use for filtering based on Rendezvous Point (RP) address. Use this parameter if you want to filter SA messages based on their originating RP.

Modes

MSDP VRF configuration mode

Router MSDP configuration mode

Usage Guidelines

The default filter action is deny. If you want to permit some source-group pairs, use a route map. A permit action in the route map allows the device to advertise the matching source-group pairs. A deny action in the route map drops the source-group pairs from advertisements.

The **no** form of this command removes the SA filters.

Examples

The following example configures extended access-control lists (ACLs) to be used in the route map definition and use them to configure a route map that denies source-group with source address 10.x.x.x and any group address, while permitting everything else.

```
device# configure terminal
device(config)# ip access-list extended 123
device(config-ext-ipacl-123)#
device(config-ext-ipacl-123)# permit ip 10.0.0.0 0.255.255.255 any
device(config-ext-ipacl-123)# exit
device(config)# ip access-list extended 125
device(config-ext-ipacl-125)# permit ip any any
device(config-ext-ipacl-125)# exit
device(config)# route-map msdp_map deny 1
device(config-routemap msdp_map)# match ip address 123
device(config-routemap msdp_map)# exit
device(config)# route-map msdp_map permit 2
device(config-routemap msdp_map)# match ip address 125
device(config-routemap msdp_map)# exit
```

The following example configures a filter that filters self-originated outbound SA messages on a route map.

```
device(config)# router msdp
device(config-msdp-router)# sa-filter originate route-map msdp_map
```

The following example configures an SA filter on a VRF.

```
device(config)# router msdp vrf blue
device(config-msdp-router-vrf blue)# sa-filter in 2.2.2.99
device(config-msdp-router-vrf blue)# sa-filter in 2.2.2.97 route-map msdp_map
device(config-msdp-router-vrf blue)# sa-filter in 2.2.2.96 route-map msdp2_map rproute-map msdp2_rp_map
```

save-current-values

Configures a backup to save the VSRP timer values received from the master instead of the timer values configured on the backup.

Syntax

save-current-values

no save-current-values

Command Default

By default, the backups always use the value of the timers received from the master.

Modes

VSRP VRID configuration mode

Usage Guidelines

Saving the current timer values instead of the configured ones helps ensure consistent timer usage for all the VRID devices.

The **no** form of the command disables saving the timer values from the master.

Examples

The following example shows how to configure a backup to save the VSRP timer values received from the master instead of the timer values configured on the backup.

```
device(config)# vlan 200
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# save-current-values
```

scale-timer

Changes the timer scale, the value used by the software to calculate all VSRP timers.

Syntax

scale-timer *number*

no scale-timer *number*

Command Default

By default, the timer scale is set to 1.

Parameters

number

Specifies the multiplier factor for the timer. The range for the timer is from 1 through 10.

Modes

Global configuration mode

Usage Guidelines

Increasing the timer scale value decreases the length of all the VSRP timers equally, without changing the ratio of one timer to another.

To achieve sub-second failover times, you can shorten the duration of all scale timers for VSRP, VRRP, and VRRP-E by adjusting the timer scale. The timer scale is a value used by the software to calculate the timers. If you increase the timer scale, each timer value is divided by the scale value. Using the timer scale to adjust timer values enables you to easily change all the timers while preserving the ratios among their values. For example, if you set the timer scale to 2, all VSRP, VRRP, and VRRP-E timer values will be divided by 2. Here is an example:

TABLE 16 Setting the Timer Scale Values

Timer	Timer scale	Timer value
Hello interval	1	1 second
	2	0.5 seconds
Dead interval	1	3 seconds
	2	1.5 seconds
Backup Hello interval	1	60 seconds
	2	30 seconds
Hold-down interval	1	3 seconds
	2	1.5 seconds

The **no** form of the command sets the multiplier to 1.

Examples

The following example shows how to set the scale timer to 2.

```
device(config)# scale-timer 2
```

scheduler-profile

Attaches a scheduler profile to one or more ports.

Syntax

scheduler-profile *profile-name*

no scheduler-profile *profile-name*

Command Default

A scheduler profile is not attached to a port.

Parameters

profile-name

Specifies the name of the scheduler profile to be attached to the port.

Modes

Interface mode

Multiple-interface mode

Usage Guidelines

The **no** form of this command removes the scheduler profile from the port or ports.

You must configure a user scheduler profile before you can attach it to a port.

Only one scheduler profile at a time can be attached to any port. You can attach a scheduler profile to more than one port.

Examples

The following example attaches a scheduler profile named user1 to a port.

```
Device(config-if-e10000-1/1/1)# scheduler-profile user1
```

The following example attaches a scheduler profile named user2 to multiple ports.

```
Device(config-mif-1/1/2-1/1/16)# scheduler-profile user2
```

The following example removes a scheduler profile named user2 from multiple ports.

```
Device(config-mif-1/1/2-1/1/16)# no scheduler-profile user2
```

History

Release version	Command history
08.0.10	This command was introduced.

securewipe

Securely erases the flash memory contents permanently according to DoD 5220.22-M standards, and afterwards reinstalls the ICX device.

Syntax

securewipe [**1pass** | **3pass** | **7pass**]

Command Default

3-pass secure wipe is the default.

Parameters

1pass

Overwrites all addressable locations with a random bit pattern.

3pass

Overwrites the previously stored data on hard disk or solid state disk drive storage areas with specific binary patterns repeatedly through three passes followed by verification.

7pass

Overwrites the previously stored data on hard disk or solid state disk drive storage areas with specific binary patterns repeatedly through seven passes followed by verification.

Modes

Privileged EXEC mode

Usage Guidelines

Only a user with Super User level privileges can perform secure wipe.

SSH and Telnet sessions cannot be used to perform secure wipe because prints are displayed only on the console.

Secure wipe is supported on the ICX 7550, ICX 7650, and ICX 7850 (router) devices only.

Powering down or power cycling the device during secure wipe may cause the device to fail and it will fail to reboot.

Powering down or power cycling the device during secure wipe may cause a failure to connect to the cloud because of the loss of the TPM keys.

If both the primary unified forwarding image (UFI) and the secondary UFI do not exist, secure wipe will be aborted.

If the UFI in flash memory is from a release prior to FastIron 09.0.10, secure wipe will be aborted.

If FIPS is enabled, it will be disabled forcibly and automatically during secure wipe.

Secure wipe is limited to the addressable range of memory.

Examples

The following example securely wipes the flash memory content and reinstalls the ICX device.

```
device#securewipe 7pass
************************************************************
* SECUREWIPE Alert *
************************************************************
* Please pay attention to the details listed below *
* 1. U-Boot params will be erased *
* 2. All flash partitions will be erased and loose all files *
* 3. FIPS will be disabled and related keys will be erased *
* 4. License and config files will be erased *
* 5. Only FI image, U-Boot and TPM keys will be restored. *
* 6. All warm memory contents will be erased *
* 7. Device may fail to boot and/or fail to connect cloud if *
* power cycled or power down during secure wipe process *
* 8. Performing secure wipe frequently may reduce the flash *
* life cycle *
************************************************************
************************************************************
* I have read the alert and SECUREWIPE can be performed now. *
* Please enter 'y' to confirm, 'n' to exit : *
************************************************************
(enter 'y' or 'n'): y
Current booted partition: Primary, UFI used for secure wipe: Primary
Prerequisite check success,securewipe is processing....
****************************************
PLEASE WAIT SYSTEM WILL GO FOR RESTART....
****************************************
```

History

Release version	Command history
09.0.10	This command was introduced.

secure-login

Configures Web Authentication to use secure (HTTPS) or non-secure (HTTP) login and logout pages.

Syntax

secure-login

no secure-login

Command Default

Web Authentication uses secure (HTTPS) login and logout pages.

Modes

Web Authentication configuration mode

Usage Guidelines

The **no** form of the command changes the setting to non-secure (HTTP) mode.

Examples

The following example configures Web Authentication to use non-secure (HTTP) login.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# no secure-login
```

secure-mac-address

Configures secure MAC addresses on tagged and untagged interfaces.

Syntax

secure-mac-address *mac-address* [*vlan-id*]

no secure-mac-address *mac-address* [*vlan-id*]

Command Default

Secure MAC addresses are not configured.

Parameters

mac-address

Specifies the MAC address.

vlan-id

Specifies the VLAN ID.

Modes

Port security interface configuration mode

Usage Guidelines

When specifying a secure MAC address on a tagged interface, you must also specify the VLAN ID.

NOTE
If MAC port security is enabled on a port and you change the VLAN membership of the port, make sure that you also change the VLAN ID specified in the **secure-mac-address** configuration statement for the port.

When a secure MAC address is applied to a tagged port, the VLAN ID is generated for both tagged and untagged ports. When you display the configuration, you see an entry for the secure MAC addresses.

The **no** form of the command removes the configured secure MAC address.

Examples

The following example shows how to specify a secure MAC address on an untagged interface.

```
device(config)# interface ethernet 1/7/11
device(config-if-e1000-1/7/11)# port security
device(config-port-security-e1000-1/7/11)# secure-mac-address 0000.0018.747C
```

The following example shows how to specify a secure MAC address on a tagged interface.

```
device(config)# interface ethernet 1/7/11
device(config-if-e1000-1/7/11)# port security
device(config-port-security-e1000-1/7/11)# secure-mac-address 0000.0018.747C 2
```

send-lifetime

Configures the time period during which the key on a keychain becomes active and is valid to be sent.

Syntax

send-lifetime [**local** | **start** { *start-date start-time* **end** { *duration* | **infinite** | *end-date end-time* } }]

no send-lifetime

Command Default

The lifetime of send keys is not configured by default.

Parameters

local
Specifies that the time zone used will be the time zone configured in the system.

start
Configures the point of time from which the key is valid to be sent.

start-date
Configures the start date in the *dd-mm-yy* format.

start-time
Configures the start time in the *hh:mm:ss* format.

end
Configures the point of time at which the send key expires.

duration
Configures the duration in seconds before the send key expires. The value ranges from 1 through 2147483646 seconds.

infinite
Configures the send key to never expire.

end-date
Configures the end date in the *dd-mm-yy* format.

end-time
Configures the end time in the *hh:mm:ss* format.

Modes

Key ID configuration mode

Usage Guidelines

All participating routers must have Network Time Protocol (NTP) enabled before setting the lifetime on the keys.

If the tolerance value is configured, the start time of send key to become active is advanced (start time minus tolerance) and the end time is moved further ahead (end time plus tolerance) before the key expires, unless the end time is set to be infinite.

A key is considered valid even when it is in the tolerance period.

A key can be selectively active for the accept lifetime and not the send lifetime.

The key must be configured with a minimum time of ten seconds.

The **no** form of the command negates the entire send lifetime and not merely individual options of the duration.

Examples

The following example configures the time period during which the key on a keychain becomes active and valid to be sent.

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)# key-id 10
device(config-keychain-xprotocol-key-10)# send-lifetime start 10-10-17 10:10:10 end 10000
```

History

Release	Command History
08.0.70	This command was introduced.

sequence (permit | deny in Extended IPv4 ACLs)

Inserts filtering rules in IPv4 extended named or numbered ACLs.

Syntax

Use the following syntax to define a TCP or UDP rule:

[**sequence***seq-num*]{**deny**|**permit**}{**tcp**|**udp**}{*S_IPaddress*[*mask*]|**host***S_IPaddress*|**any**}[*source-comparison-operators*] {*D_IPaddress*[*mask*]|**host***D_IPaddress*|**any**}[**established**][*destination-comparison-operators*][**precedence**{*precedence-name*|*precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define an ICMP rule:

[**sequence***seq-num*]{**deny**|**permit**}**icmp**{*S_IPaddress*[*mask*]|**host***S_IPaddress*|**any**}{*D_IPaddress*[*mask*]|**host***D_IPaddress*|**any**}[*icmp-num*|*icmp-type*][**precedence**{*precedence-name*|*precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define a rule for protocols other than TCP, UDP, or ICMP:

[**sequence***seq-num*]{**deny**|**permit**}*ip-protocol* {*S_IPaddress*[*mask*]|**host***S_IPaddress*|**any**}{*D_IPaddress*[*mask*]|**host***D_IPaddress*|**any**} [**precedence**{*precedence-name*|*precedence-value*}][**tos**{*tos-name*|*tos-value*}][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*] [**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**802.1p-and-internal-marking** *priority-value*][**traffic-policy***name*][**log**][**mirror**]

no sequence*seq-num*

Parameters

sequence

(Optional) Enables you to assign a sequence number to the rule.

seq-num

Valid values range from 1 through 65000.

deny

Specifies rules to deny traffic.

permit

Specifies rules to permit traffic.

ip-protocol

Specifies the type of IPv4 packet to filter. You can either specify a protocol number (from 0 through 255) or a supported protocol name. For a complete list of protocols, type **?** after **permit** or **deny**. Supported protocols include:

- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **igrp**—Internet Gateway Routing Protocol
- **ip**—any IPv4 protocol
- **ospf**—Open Shortest Path First
- **tcp**—Transmission Control Protocol

- **udp**—User Datagram Protocol

S_IPaddress
Specifies a source address for which you want to filter the subnet.

mask
Defines a mask, whose effect is to specify a subnet that includes the source address that you specified. For options to specify the mask, see the Usage Guidelines.

host
Specifies the source as a host.

S_IPaddress
Specifies the source address of the host.

any
Specifies all source addresses.

source-comparison-operators and *destination-comparison-operators*
If you specified **tcp** or **udp**, the following optional operators are available:

eq
Specifies the address is equal to the port name or number you enter after **eq**.

gt
Specifies port numbers that are equal to or greater than the port number or that are equal to or greater than the numeric equivalent of the port name you enter after **gt**.

lt
Specifies port numbers that are equal to or less than the port number or that are equal to or less than the numeric equivalent of the port name you enter after **lt**.

neq
Specifies all port numbers except the port number or port name you enter after **neq**.

range
Specifies all port numbers that are between the first port name or number and the second name or number you enter following the **range** keyword. Enter the range as two values separated by a space. The first port number in the range must be less than the last number in the range. For example, to apply the policy to all ports between and including 23 (Telnet) and 53 (DNS), enter the following: 23 53 .

D_IPaddress
Specifies a destination address for which you want to filter the subnet.

mask
Defines a subnet mask that includes the destination address that you specified. For mask options, refer to the Usage Guidelines.

host
Specifies a host as destination.

D_IPaddress
Specifies the destination address of the host.

any
Specifies all destination addresses.

established

(For TCP rules only) Filter packets that have the Acknowledgment (ACK) or Reset (RST) flag set. This policy applies only to established TCP sessions, not to new sessions.

icmp-num|*icmp-type*

(For ICMP only) Specifies a named or numbered message type.

icmp-num

Specifies a numbered message type. Use this format if the rule also needs to include **precedence**, **tos** , one of the DSCP options, one of the 802.1p options, **internal-priority-marking** , or **traffic-policy**.

any-icmp-type

Specifies any ICMP type.

echo

Specifies an echo request (ping).

echo-reply

Specifies an echo reply.

information-request

Specifies an information request.

mask-reply

Specifies an address mask reply.

mask-request

Specifies an address mask request.

parameter-problem

Specifies a parameter problem.

redirect

Specifies a redirect message.

source-quench

Specifies a relieve congestion message.

time-exceeded

Specifies a time exceeded message.

timestamp-reply

Specifies a timestamp reply.

timestamp-request

Specifies a timestamp request.

unreachable

Specifies a destination-unreachable message.

precedence{*precedence-name*|*precedence-value*}

Specifies a *precedence-name* or corresponding *precedence-value*, as follows:

0 or **routine**

Specifies routine precedence.

1 or **priority**

Specifies priority precedence.

2 or **immediate**
Specifies immediate precedence.

3 or **flash**
Specifies flash precedence.

4 or **flash-override**
Specifies flash-override precedence.

5 or **critical**
Specifies critical precedence.

6 or **internet**
Specifies internetwork control precedence.

7 or **network**
Specifies network control precedence.

tos{*tos-name*|*tos-value*}
Specifies a type of service (ToS). Enter either a supported *tos-name* or the equivalent *tos-value*.

0 or **normal**
Specifies normal ToS.

1 or **min-monetary-cost**
Specifies min monetary cost ToS.

2 or **max-reliability**
Specifies max reliability ToS.

4 or **max-throughput**
Specifies max throughput ToS.

8 or **min-delay**
Specifies min-delay ToS.

dscp-matching*dscp-value*
Filters by DSCP value. Values range from 0 through 63.

dscp-marking*dscp-value*
Assigns the DSCP value that you specify to the packet. Values range from 0 through 63.

802.1p-priority-matching *802.1p-value*
Filters by 802.1p priority, for rate limiting. Values range from 0 through 7.

802.1p-priority-marking *802.1p-value*
Assigns the 802.1p value that you specify to the packet. Values range from 0 through 7.

internal-priority-marking *queuing-priority*
Assigns the internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

802.1p-and-internal-marking *priority-value*
Assigns the identical 802.1p value and internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

traffic-policy*name*
Enables the device to limit the rate of inbound traffic and to count the packets and bytes per packet to which ACL permit or deny clauses are applied. For configuration procedures and examples, refer to the chapter "Traffic Policies" in the *RUCKUS FastIron Traffic Management Configuration Guide*.

log

Enables SNMP traps and Syslog messages for the rule. In addition, logging must be enabled using the **logging enable** command.

mirror

Mirrors packets matching the rule.

Modes

IPv4 ACL configuration mode

IPv6 ACL configuration mode

Usage Guidelines

Extended ACLs permit or deny traffic according to source and destination addresses, port protocol, and other IPv4 frame content. You can also enable logging and mirroring.

The order of the rules in an ACL is critical, as the first matching rule stops further processing. When creating rules, specifying sequence values determines the order of rule processing. If you do not specify a sequence value, the rule is added to the end of the list. Such a rule is automatically assigned the next multiple of 10 as a sequence number.

You can specify a mask in either of the following ways:

- Wildcard mask format (for example, 0.0.0.255). The advantage of this format is that it enables you mask any bit, for example by specifying 0.255.0.255.
- Classless Interdomain Routing (CIDR) format, in which you specify the number of bits of the prefix. For example, appending /24 to an IPv4 address is equivalent to specifying 0.0.0.255 in the wildcard mask format.

If you specify **icmp** and also specify the **any-icmp-type** option, the following QoS options are not available: **dscp-marking**, **dscp-matching**, **internal-priority-marking**, **802.1p-priority-marking**, ond **802.1p-priority-matching**.

When specifying type of service (ToS), you can indicate multiple *tos-value* options by entering the sum of the needed ToS options. For example, to specify both **max-reliability** and **min-delay**, enter **10**. To specify all options, enter **15**. Values range from **0** through **15**.

In a rule that includes one or more of the following parameters, the **log** keyword is ignored:

- **dscp-matching**
- **dscp-marking**
- **802.1p-priority-matching**
- **802.1p-priority-marking**
- **802.1p-and-internal-marking**

For details on 802.1p priority matching, refer to "Inspecting the 802.1p bit in the ACL for adaptive rate limiting" in the *RUCKUS FastIron Traffic Management Configuration Guide*.

To delete a rule from an ACL, do either of the following:

- Enter **no sequence***seq-value*.
- Type **no** followed by the full command syntax without the **sequence***seq-value*.

Examples

The following ACL, applied to an Ethernet interface, blocks and logs IPv4 TCP packets transmitted by Telnet from a specified host to any destination.

```
device# configure terminal
device(config)# ip access-list extended block_telnet
device(config-ext-ipacl-block_telnet)# sequence 10 deny tcp host 10.157.22.26 any eq telnet log
device(config-ext-ipacl-block_telnet)# sequence 20 permit ip any any
device(config-ext-ipacl-block_telnet)# exit
device(config)# interface ethernet 1/1/1
device(config-if-1/1/1)# ip access-group block_telnet in
```

History

Release version	Command history
08.0.50	This command was modified to support the **sequence** keyword and to support logging in permit rules.

sequence (permit | deny in IPv6 ACLs)

Inserts filtering rules in IPv6 access control lists (ACLs).

Syntax

Use the following syntax to define a TCP or UDP rule:

[**sequence***seq-num*]{**deny**|**permit**}{**tcp**|**udp**}{*ipv6-source-prefix/prefix-length*|**host***source-ipv6_address*|**any**}[*source-comparison-operators*]{*ipv6-destination-prefix/prefix-length*|**host***ipv6-destination-address*|**any**}[**established**][*destination-comparison-operators*][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define an ICMP rule:

[**sequence***seq-num*]{**deny**|**permit**}**icmp**{*ipv6-source-prefix/prefix-length*|**host***source-ipv6_address*|**any**}{*ipv6-destination-prefix/prefix-length*|**host***ipv6-destination-address*|**any**}[*icmp-num*|*icmp-type*][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define an IPv6 rule:

[**sequence***seq-num*]{**deny**|**permit**}**IPv6**{*ipv6-source-prefix/prefix-length*|**host***source-ipv6_address*|**any**}{*ipv6-destination-prefix/prefix-length*|**host***ipv6-destination-address*|**any**}[**fragments**|**routing**][**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**traffic-policy***name*][**log**][**mirror**]

Use the following syntax to define an AHP, ESP, SCTP, *protocol-name*- or *protocol-number* rule:

[**sequence***seq-num*]{**deny**|**permit**}{**AHP**|**ESP**|**SCTP**|*protocol-name*|*protocol-number*}{*ipv6-source-prefix/prefix-length*|**host***source-ipv6_address*|**any**}{*ipv6-destination-prefix/prefix-length*|**host***ipv6-destination-address*|**any**}[**dscp-matching***dscp-value*][**dscp-marking***dscp-value*][**802.1p-priority-matching** *802.1p-value*][**802.1p-priority-marking** *802.1p-value*][**internal-priority-marking** *queuing-priority*][**traffic-policy***name*][**log**][**mirror**]

no sequence*seq-num*

Parameters

sequence

(Optional) Enables you to assign a sequence number to the rule.

seq-num

Valid values range from 1 through 65000.

deny

Specifies rules to deny traffic.

permit

Specifies rules to permit traffic.

protocol-name|*protocol-number*

Specifies the type of IPv6 packet you are filtering. You can specify one of the following protocol names or a valid protocol number (from 0 through 255).

- **ahp**: Authentication Header
- **esp**: Encapsulating Security Payload
- **icmp**: Internet Control Message Protocol

- **ipv6**: Internet Protocol, version 6
- **sctp**: Stream Control Transmission Protocol
- **tcp**: Transmission Control Protocol
- **udp**: User Datagram Protocol

ipv6-source-prefix/prefix-length
: Specifies a source prefix and prefix length that a packet must match for the specified action (deny or permit) to occur. You must specify the *ipv6-source-prefix* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. Specify the *prefix-length* parameter as a decimal value, preceded by a slash mark (/).

host*source-ipv6_address*
: Specifies a host source IPv6 address. When you use this parameter, you do not need to specify the prefix length. A prefix length of 128 is implied.

any
: Specifies all source addresses.

source-comparison-operators and *destination-comparison-operators*
: If you specified **tcp** or **udp**, the following optional operators are available:

  eq
  : Specifies the port name or number you enter after **eq**.

  gt
  : Specifies port numbers equal to or greater than the port number or equal to or greater than the numeric equivalent of the port name you enter after **gt**.

  lt
  : Specifies port numbers that are less than or equal to the port number or less than or equal to the numeric equivalent of the port name you enter after **lt**.

  neq
  : Specifies all port numbers except the port number or port name you enter after **neq**.

  range
  : Specifies all port numbers that are between the first port name or number and the second one you enter following the **range** keyword. The range includes the port names or numbers you enter. For example, to apply the policy to all ports between and including 23 (Telnet) and 53 (DNS), enter the following: **range 23 53** (two values separated by a space). The first port number in the range must be lower than the last number in the range.

ipv6-destination-prefix/prefix-length
: Specifies a destination prefix and prefix length that a packet must match for the specified action (deny or permit) to occur. You must specify the *ipv6-destination-prefix* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. Specify the *prefix-length* parameter as a decimal value, preceded by a slash mark (/).

host*destination-ipv6_address*
: Specifies a destination host IPv6 address. When you use this parameter, you do not need to specify the prefix length. A prefix length of 128 is implied.

any
: Specifies all destination addresses.

established
: (For TCP only) Filter packets that have the Acknowledgment (ACK) or Reset (RST) flag set. This policy applies only to established TCP sessions, not to new sessions.

icmp-num

Specifies a numbered message type.

icmp-type

(For ICMP only) Specifies a named message type, from the following list.

beyond-scope

Specifies a beyond scope message.

destination-unreachable

Specifies a destination unreachable message.

echo-reply

Specifies an echo reply.

echo-request

Specifies an echo request (ping).

header

Specifies a parameter problem header error message.

hop-limit

Specifies an in-transit, time exceeded message.

mld-query

Specifies an MLD query message.

mld-reduction

Specifies an MLD reduction message.

mld-report

Specifies an MLD report message.

nd-na

Specifies a neighbor discovery (ND) neighbor advertisement message.

nd-ns

Specifies an ND neighbor solicitation message.

next-header

Specifies a parameter problem next-header error message.

no-admin

Specifies a destination unreachable administratively prohibited message.

no-route

Specifies a destination unreachable no route message.

packet-too-big

Specifies a packet too big message.

parameter-option

Specifies a parameter-option problem message.

parameter-problem

Specifies a parameter problem message.

port-unreachable

Specifies a destination-port unreachable message.

reassembly-timeout
Specifies a reassembly timeout message.

renum-command
Specifies a renumber command message.

renum-result
Specifies a renumber result message.

renum-seq-number
Specifies a renumber sequence number message.

router-advertisement
Specifies a router advertisment message.

router-renumbering
Specifies a router renumbering message.

router-solicitation
Specifies a router solicitation message.

time-exceeded
Specifies a time exceeded message.

unreachable
Specifies a destination-unreachable message.

fragments
(For IPv6 protocol only) Specifies fragmented packets that contain a non-zero offset.

routing
(For IPv6 protocol only) Specifies source-routed packets.

dscp-matching*dscp-value*
Filters by DSCP value. Values range from 0 through 63.

dscp-marking*dscp-value*
Assigns the DSCP value that you specify to the packet. Values range from 0 through 63.

802.1p-priority-matching *802.1p-value*
Filters by 802.1p priority, for rate limiting. Values range from 0 through 7.

802.1p-priority-marking *802.1p-value*
Assigns the 802.1p value that you specify to the packet. Values range from 0 through 7.

internal-priority-marking *queuing-priority*
Assigns the internal queuing priority (traffic class) that you specify to the packet. Values range from 0 through 7.

traffic-policy*name*
Enables the device to limit the rate of inbound traffic and to count the packets and bytes per packet to which ACL permit or deny clauses are applied.

log
Enables SNMP traps and syslog messages for the rule.

mirror
Mirrors packets matching the rule.

Modes

ACL configuration mode

Usage Guidelines

The order of the rules in an ACL is critical, as the first matching rule stops further processing. When creating rules, specifying sequence values determines the order of rule processing. If you do not specify a sequence value, the rule is added to the end of the list. Such a rule is automatically assigned the next multiple of 10 as a sequence number.

In a rule that includes one or more of the following parameters, the **log** keyword is ignored:

- **dscp-matching**
- **dscp-marking**
- **802.1p-priority-matching**
- **802.1p-priority-marking**

To enable hop-limit check for the ACL, enter the **enable nd hop-limit** command from IPv6 ACL configuration mode.

For traffic policy configuration procedures and examples, refer to "Traffic Policies" in the *RUCKUS FastIron Traffic Management Configuration Guide*.

To delete a rule from an ACL, do either of the following:

- Enter **no sequence***seq-value*.
- Type **no** followed by the full command syntax without **sequence***seq-value*.

For details on 802.1p rate limiting, refer to "Inspecting the 802.1p bit in the ACL for adaptive rate limiting" in the *RUCKUS FastIron Traffic Management Configuration Guide*.

For the **log** keyword to trigger a log entry, logging must be enabled with the **logging enable** command.

Examples

The following example creates an IPv6 ACL named "netw", with remarks preceding each rule.

```
device# configure terminal
device(config)# ipv6 access-list netw

device(config-ipv6-access-list netw)# remark Permits ICMP traffic from 2001:DB8:e0bb::x to 2001:DB8::x.
device(config-ipv6-access-list netw)# sequence 10 permit icmp 2001:DB8:e0bb::/64 2001:DB8::/64

device(config-ipv6-access-list netw)# remark Denies traffic from 2001:DB8:e0ac::2 to 2001:DB8:e0aa:
0::24.
device(config-ipv6-access-list netw)# sequence 20 deny ipv6 host 2001:DB8:e0ac::2 host 2001:DB8:e0aa:
0::24

device(config-ipv6-access-list netw)# remark Denies all UDP traffic.
device(config-ipv6-access-list netw)# sequence 30 deny udp any any

device(config-ipv6-access-list netw)# remark Permits traffic not explicitly denied by the previous
rules.
device(config-ipv6-access-list netw)# sequence 40 permit ipv6 any any
```

The following example applies "netw" to incoming traffic on ports 1/1/2 and 1/4/3.

```
device# configure terminal
device(config)# interface ethernet 1/1/2
device(config-if-e1000-1/1/2)# ipv6 enable
device(config-if-e1000-1/1/2)# ipv6 access-group netw in
device(config-if-e1000-1/1/2)# exit
device(config)# interface ethernet 1/4/3
device(config-if-e1000-1/4/3)# ipv6 enable
device(config-if-e1000-1/4/3)# ipv6 access-group netw in
```

The following example creates an IPv6 ACL named "rtr", with remarks preceding each rule.

```
device# configure terminal
device(config)# ipv6 access-list rtr

device(config-ipv6-access-list rtr)# remark Denies TCP traffic from 2001:DB8:21::x to 2001:DB8:22::x.
device(config-ipv6-access-list rtr)# deny tcp 2001:DB8:21::/24 2001:DB8:22::/24

device(config-ipv6-access-list rtr)# remark Denies UDP traffic from UDP ports 5 through 6 to
2001:DB8:22::/24.
device(config-ipv6-access-list rtr)# deny udp any range 5 6 2001:DB8:22::/24

device(config-ipv6-access-list rtr)# remark Permits traffic not explicitly denied by the previous rules.
device(config-ipv6-access-list rtr)# permit ipv6 any any
```

The following example applies "rtr" to incoming traffic on ports 1/2/1 and 1/2/2.

```
device# configure terminal
device(config)# interface ethernet 1/2/1
device(config-if-e1000-1/2/1)# ipv6 enable
device(config-if-e1000-1/2/1)# ipv6 access-group rtr in
device(config-if-e1000-1/2/1)# exit
device(config)# int eth 1/2/2
device(config-if-e1000-1/2/2)# ipv6 enable
device(config-if-e1000-1/2/2)# ipv6 access-group rtr in
```

The following are examples of show command output for the ACL "rtr". Note that sequence numbers were automatically assigned.

```
device# show running-config
ipv6 access-list rtr
10: deny tcp 2001:DB8:21::/24 2001:DB8:22::/24
20: deny udp any range rje 6 2001:DB8:22::/24
30:permit ipv6 any any

device# show ipv6 access-list rtr
ipv6 access-list rtr: 3 entries
10: deny tcp 2001:DB8:21::/24 2001:DB8:22::/24
20: deny udp any range rje 6 2001:DB8:22::/24
30: permit ipv6 any any
```

History

Release version	Command history
08.0.50	This command was modified to support the **sequence** keyword and to support logging in permit rules.

sequence (permit | deny in Standard IPv4 ACLs)

Inserts filtering rules in IPv4 standard named or numbered ACLs. Standard ACLs permit or deny traffic according to source address only.

Syntax

sequence*seq-num*{**deny**|**permit**}{*S_IPaddress*[*mask*]|**host***S_IPaddress*|**any**}[**log**][**mirror**]

{**deny**|**permit**}{*S_IPaddress*[*mask*]|**host***S_IPaddress*|**any**}[**log**][**mirror**]

no sequence*seq-num*

no{**deny**|**permit**}{*S_IPaddress*[*mask*]|**host***S_IPaddress*|**any**}[**log**][**mirror**]

Parameters

sequence
(Optional) Enables you to assign a sequence number to the rule.

seq-num
Valid values range from 1 through 65000.

deny
Specifies rules to deny traffic.

permit
Specifies rules to permit traffic.

S_IPaddress
Specifies a source address for which you want to filter the subnet.

mask
Defines a subnet mask that includes the source address you specified.

host
Indicates the source IP address is a host address.

S_IPaddress
Specifies source address.

any
Specifies all source addresses.

log
Enables logging for the rule.

mirror
Mirrors packets matching the rule.

Modes

IPv4 ACL configuration mode

IPv6 ACL configuration mode

Usage Guidelines

This command configures rules to permit or drop traffic based on source addresses. You can also enable logging and mirroring.

The order of the rules in an ACL is critical, as the first matching rule stops further processing. When creating rules, specifying sequence values determines the order of rule processing. If you do not specify a sequence value, the rule is added to the end of the list. Such a rule is automatically assigned the next multiple of 10 as a sequence number.

You can specify a mask in either of the following ways:

- Wildcard mask format. The advantage of this format is that it enables you to mask any bit, for example by specifying 0.255.0.255.
- Classless Interdomain Routing (CIDR) format—in which you specify the number of bits of the prefix. For example, appending /24 to an IPv4 address is equivalent to specifying 0.0.0.255 in the wildcard mask format.

For the **log** keyword to trigger a log entry, logging must be enabled with the **logging enable** command.

To delete a rule from an ACL, do either of the following:

- Enter **no sequence***seq-value*.
- Type **no** followed by the full command syntax without **sequence***seq-value*.

Examples

The following example shows how to configure a standard numbered ACL and apply it to incoming traffic on port 1/1/1.

```
device# configure terminal
device(config)# ip access-list standard 1
device(config-std-ipacl-1)# sequence 10 deny host 10.157.22.26 log
device(config-std-ipacl-1)# sequence 20 deny 10.157.29.12 log
device(config-std-ipacl-1)# sequence 30 deny host IPHost1 log
device(config-std-ipacl-1)# sequence 40 permit any
device(config-std-ipacl-1)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# ip access-group 1 in
```

History

Release version	Command history
08.0.50	This command was modified to support the **sequence** keyword and to support logging in permit rules.

server (NTP)

Configures the device in client mode and specifies the NTP servers to synchronize the system clock.

Syntax

server { *ipv4-address* | *ipv6-address* } [**maxpoll** *interval*] [**minpoll** *interval*] [**version** *version-number*] [**key** *key-id*] [**burst**]

no server { *ipv4-address* | *ipv6-address* } [**maxpoll** *interval*] [**minpoll** *interval*] [**version** *version-number*] [**key** *key-id*] [**burst**]

Parameters

ipv4-address
: Specifies the IPv4 address of the server that provides the clock synchronization.

ipv6-address
: Specifies the IPv6 address of the server that provides the clock synchronization.

version *version-number*
: Specifies the Network Time Protocol (NTP) version number. Valid values are 3 and 4. The default value is 4.

key *key-id*
: Specifies the authentication key range. The value can range from 1 to 65535.

minpoll *interval*
: Specifies the shortest polling interval. The range is from 4 through 17. The default is 6. The interval argument is a power of 2 (4=16, 5=32, 6=64, 7=128, 8=256, 9=512, and so on).

maxpoll *interval*
: Specifies the longest polling interval. The range is from 4 through 17. The default is 10. The interval argument is a power of 2 (4=16, 5=32, 6=64, 7=128, 8=256, 9=512, and so on).

burst
: Sends a burst of packets to the server at each polling interval.

Modes

NTP configuration mode

Usage Guidelines

A maximum of eight NTP servers can be configured.

The **no** form of the command removes the NTP server configuration.

Examples

The following example configures the NTP server.

```
device(config)# ntp
device(config-ntp)# server 10.1.1.1 key 23 maxpoll 15 minpoll 8 version 3 burst
```

service local-user-protection

Prevents unauthorized deletion or modification of a user account.

Syntax

service local-user-protection

no service local-user-protection

Command Default

The user account can be deleted or modified without any authentication; that is, user account security is disabled.

Modes

Global configuration mode

Usage Guidelines

This command allows for the deletion of user accounts or changing the password or privilege level of the user (using the **username** command) only upon successful validation of the existing user password.

If the command is enabled and you try to delete or modify a user account using the **username**, you will be prompted for confirmation to proceed. Upon confirmation, you will be prompted to provide the existing password. The attempt to modify or delete a user account is successful only if the correct password is entered.

The **no** form of the command disables user account security; the deletion or modification of the user account without any authentication is allowed.

Examples

The following example permits the modification of the user account password only after providing the existing password.

```
device(config)# username user1 password xpassx
device(config)# service local-user-protection
device(config)# username user1 password ypasswordy
User already exists. Do you want to modify: (enter 'y' or 'n'): y
To modify or remove user, enter current password: ******
```

The following example prevents unauthorized modification of the user account password.

```
device(config)# username user1 password ypasswordy
device(config)# service local-user-protection
device(config)# username user1 password zpassz
User already exists. Do you want to modify: (enter 'y' or 'n'): y
To modify or remove user, enter current password: ****
Error: Current password doesn't match. Access denied
```

History

Release version	Command history
08.0.40	This command was introduced.

set interface null0

Drops traffic when the null0 statement becomes the active setting as determined by the route-hop selection process.

Syntax

set interface null0

no set interface null0

Command Default

The configuration to direct the traffic to the null0 interface is not configured.

Modes

Route map configuration mode

Usage Guidelines

This command sends the traffic to the null0 interface, which is the same as dropping the traffic.

The **no** form of this command deletes the matching filter from the ACL.

Examples

The following example configures the PBR policy to send all traffic from 192.168.1.204/32 to the null interface, thus dropping the traffic instead of forwarding it.

```
device# configure terminal
device(config)# ip access-list standard 56
device(config-std-ipacl-56)# permit 192.168.1.204 0.0.0.0
device(config-std-ipacl-56)# exit
device(config)# route-map file-13 permit 56
device(config-routemap file-13)# match ip address 56
device(config-routemap file-13)# set interface null0
device(config-routemap file-13)# exit
```

set ip next-hop

Configures the next-hop IP address for the traffic that matches a match statement in the route map.

Syntax

set ip next-hop{**peer-address**|*ip-address*[**vrf***vrf-name*]}

no set ip next-hop{**peer-address**|*ip-address*[**vrf***vrf-name*]}

Command Default

The next-hop IP address is not configured by default.

Parameters

peer-address
Specifies the BGP peer IP address.

ip-address
Specifies the IP address of the next hop.

vrf*vrf-name*
Specifies the VRF of the interface.

Modes

Route map configuration mode

Usage Guidelines

By default, the TTL value in the packet header is decremented (decreased) for routed traffic and the packet will be discarded when the TTL is exhausted. TTL functions as a hop count limit and every routing hop decrements the TTL value by one. When the TTL value becomes zero, the packet is discarded to prevent routing loops.

Policy-based routing (PBR) does not support the **peer-address** option while configuring the next-hop IP address using the **set ip next-hop** command.

For PBR on an interface in a VRF, if the VRF is not specified in the next hop (that is, only the IP address is specified as the next hop), the default VRF of the interface is considered. The next hop in a route map will take effect only if the interface on which the route map is applied and the next hop in the route map are in the same VRF

The **no** form of the command removes the next-hop IP address configured for the traffic.

Examples

The following example configures a route map with the default VRF of the interface as the next hop.

```
device# configure terminal
device(config)# route-map test-route permit 99
device(config-routemap test-route)# match ip address 100
device(config-routemap test-route)# set ip next-hop 192.168.3.1
device(config-routemap test-route)# exit
```

The following example configures a route map which specifies the next hop is a VRF named as vrf_c.

```
device# configure terminal
device(config)# route-map test-route permit 99
device(config-routemap test-route)# match ip address 100
device(config-routemap test-route)# set ip next-hop 192.168.3.1 vrf vrf_c
device(config-routemap test-route)# exit
```

History

Release version	Command history
08.0.50	The **vrf** option was introduced.

set next-hop-ip-tunnel

Configures an IPsec or GRE tunnel interface as the next hop of a PBR route map.

Syntax

set next-hop-ip-tunnel*tunnel-id*

no set next-hop-ip-tunnel*tunnel-id*

Command Default

The next hop is not set to a tunnel interface.

Parameters

tunnel-id

Specifies the ID of the tunnel interface.

Modes

Route map configuration mode

Usage Guidelines

When PBR is used to map IP traffic into a GRE tunnel or IPsec tunnel, the VRF of the tunnel interface is considered as the egress VRF interface.

The **no** form of the command removes the tunnel interface as the PBR next hop.

Examples

The following example configures tunnel interface 1 as the PBR next hop.

```
device# interface tunnel 1
device(config-tnif-1)# vrf forwarding blue
device(config-tnif-1)# tunnel source ethernet 1/1/1
device(config-tnif-1)# tunnel destination 10.2.2.1
device(config-tnif-1)# tunnel mode ipsec ipv4
device(config-tnif-1)# tunnel protection ipsec profile prof-blue
device(config-tnif-1)# ip address 10.4.4.4/24
device(config-tnif-1)# exit
device(config)# ip access-list standard 99
device(config-std-ipacl-99)# permit 10.157.23.0 0.0.0.255
device(config-std-ipacl-99)# exit
device(config)# route-map test-route permit 99
device(config-routemap test-route)# match ip address 99
device(config-routemap test-route)# set next-hop-ip-tunnel 1
device(config-routemap test-route)# end
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# vrf forwarding blue
device(config-if-e1000-1/1/3)# ip policy route-map test-route
device(config-if-e1000-1/1/3)# end
```

History

Release version	Command history
08.0.50	This command was introduced.

sflow agent-ip

Configures an arbitrary IPv4 or IPv6 address as the sFlow agent IP address.

Syntax

sflow agent-ip { *ipv4-addr* | *ipv6-addr* }

no sflow agent-ip { *ipv4-addr* | *ipv6-addr* }

Command Default

By default, the device automatically selects the sFlow agent IP address based on the configuration.

Parameters

ipv4-addr

Specifies an IPv4 address as the sFlow agent IP address.

ipv6-addr

Specifies an IPv6 address as the sFlow agent IPv6 address.

Modes

Global configuration mode

Usage Guidelines

The sampled sFlow data that is sent to the collectors includes an agent_address field. This field identifies the device (the sFlow agent) that sent the data. By default, the device automatically selects the sFlow agent IP address based on the configuration. Alternatively, you can configure the device to use an arbitrary IPv4 or IPv6 address as the sFlow agent IP address instead.

The **no** form of the command removes the configured IPv4 or IPv6 address as the sFlow agent IP address.

Examples

The following example configures an IPv4 address as the sFlow agent IP address.

```
device(config)# sflow agent-ip 10.10.10.1
```

The following example configures an IPv6 address as the sFlow agent IP address.

```
device(config)# sflow agent-ip FE80::240:D0FF:FE48:4672
```

sflow destination

Configures an sFlow collector for the destination address.

Syntax

sflow destination [*ip-address* | **ipv6** *ipv6-address*] [*udp-port-number*] [**vrf** *vrf-name*]

no sflow destination [*ip-address* | **ipv6** *ipv6-address*] [*udp-port-number*] [**vrf** *vrf-name*]

Command Default

An sFlow collector is not configured.

Parameters

ip-address
: Specifies the IPv4 destination address.

ipv6 *ipv6-address*
: Specifies the IPv6 destination address.

udp-port-number
: Specifies the User Datagram Protocol (UDP) port number. The default value is 6343.

vrf *vrf-name*
: Specifies the Virtual Routing and Forwarding (VRF) name.

Modes

Global configuration mode

Usage Guidelines

sFlow exports traffic statistics to an external collector. You can specify up to four collectors. You can specify more than one collector with the same IP address if the UDP port numbers are unique. You can have up to four unique combinations of IP addresses and UDP port numbers.

By default sFlow uses the management VRF to send the samples to the collector. If no management VRF is configured, sFlow uses the default VRF, and this default VRF ID will be assigned to any configured collector that does not have a user-included VRF.

sFlow-forwarding ports can come from ports that belong to any VRF. The port does not have to be in the same VRF as the collector. sFlow collects packets from all sFlow-forwarding ports, even if they do not belong to a VRF, compiles the packets into the sFlow samples, and sends the samples to the particular collector with no filtering for VRF membership.

The **no** form of the command configures the management VRF to send the samples to the collector.

Examples

The following example configures an sFlow collector and specifies a VRF.

```
device(config)# sflow destination 10.10.10.10 vrf customer1
```

sflow enable

Enables sFlow forwarding globally.

Syntax

sflow enable

no sflow enable

Command Default

sFlow is not enabled.

Modes

Global configuration mode

Usage Guidelines

To enable sFlow forwarding, you must first enable it on a global basis and then use the **sflow forwarding** command to enable it on individual interfaces or LAG ports, or both.

The **no** form of the command disables sFlow forwarding globally.

Examples

The following example enables sFlow forwarding globally.

```
device(config)# sflow enable
```

sflow export

Configures exporting, to the sFlow collector, the CPU usage and memory usage information or exporting CPU-directed data.

Syntax

sflow export { **cpu-traffic** [*traffic-seconds*] | **system-info** [*info-seconds*] }

no sflow export { **cpu-traffic** [*traffic-seconds*] | **system-info** [*info-seconds*] }

Command Default

By default, CPU and memory usage information and CPU-directed data are not exported.

Parameters

cpu-traffic

Specifies the CPU usage.

traffic-seconds

Specifies the average sampling rate of incoming packets on an sFlow-enabled port to the number of flow samples taken from those packets.

system-info

Specifies the system information and the memory usage.

info-seconds

Specifies the polling interval, in seconds. The default polling interval for exporting CPU and memory usage information to the sFlow collector is 20 seconds and the interval for exporting CPU-directed data to the sFlow collector is 16.

Modes

Global configuration mode

Usage Guidelines

The polling interval defines how often sFlow data for a port is sent to the sFlow collector.

The **no** form of the command removes the configured value and sets the sampling rate or the polling interval to its default value.

Examples

The following example sets the sampling rate to 2048.

```
device(config)# sflow export cpu-traffic 2048
```

The following example enables the export of CPU usage and memory usage information.

```
device(config)# sflow export system-info
```

The following example sets the polling interval for exporting CPU and memory usage information to 30 seconds.

```
device(config)# sflow export system-info 30
```

sflow forwarding

Enables sFlow forwarding on individual interfaces.

Syntax

sflow forwarding

no sflow forwarding

Command Default

sFlow forwarding is not enabled on individual interfaces.

Modes

Interface configuration mode

Usage Guidelines

You must use both the **sflow enable** command and the **sflow forwarding** command to enable the feature.

The **no** form of the command disables sFlow forwarding on individual interfaces.

Examples

The following example enables sFlow forwarding on a range of Ethernet interfaces.

```
device(config)# sflow enable
device(config)# interface ethernet 1/1/1 to 1/1/8
device(config-mif-1/1/1-1/1/8)# sflow forwarding
```

sflow forwarding (LAG)

Enables sFlow forwarding on an individual port in a deployed LAG.

Syntax

sflow forwarding { **ethernet** *stackid/slot/port* | **port-name** *name* }

no sflow forwarding { **ethernet** *stackid/slot/port* | **port-name** *name* }

Command Default

sFlow is not configured.

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet port within the LAG on which you want to enable sFlow forwarding.

port-name *name*

Specifies a named port within the LAG on which you want to enable sFlow forwarding.

Modes

LAG configuration mode

Usage Guidelines

For a keep-alive LAG, sFlow can be enabled only in interface configuration mode and not in LAG configuration mode.

The **no** form of the command disables sFlow forwarding.

Examples

The following example shows how to enable sFlow forwarding on an individual port.

```
device(config)# lag blue static id 1
device(config-lag-blue)# sflow forwarding ethernet 1/3/1
```

The following example shows how to enable sFlow forwarding on a named port.

```
device(config)# lag test2 static id 2
device(config-lag-test2)# sflow forwarding port-name port1
```

sflow management-vrf-disable

Disables the management Vitual Routing and Forwarding (VRF) in sFlow.

Syntax

sflow management-vrf-disable

no sflow management-vrf-disable

Command Default

sFlow uses the management VRF to send samples to the collector.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command enables the management VRF in sFlow.

Examples

The following example disables management VRF in sFlow.

```
device(config)# sflow management-vrf-disable
```

sflow max-packet-size

Configures the maximum flow sample size sent to the sFlow collector.

Syntax

sflow max-packet-size *size*

no sflow max-packet-size

Command Default

The default maximum flow sample size is 128 bytes.

Parameters

size

Specifies the maximum sFlow packet size, in bytes. For sFlow version 5, the maximum flow sample size is 1300 bytes.

Modes

Global configuration mode

Usage Guidelines

With sFlow version 5, you can specify the maximum size of the flow samples sent to the sFlow collector. If a packet is larger than the specified maximum size, only the contents of the packet up to the specified maximum number of bytes are exported. If the size of the packet is smaller than the specified maximum, the entire packet is exported.

The **no** form of the command removes the configured value and reverts to the default value.

Examples

The following example sets the maximum flow sample size to 1024.

```
device(config)# sflow max-packet-size 1024
```

sflow polling-interval

Configures the sflow polling interval.

Syntax

sflow polling-interval *secs*

no sflow polling-interval

Command Default

The default polling interval is 20 seconds.

Parameters

secs

Specifies the polling interval, in seconds. The value can range from 0 through 429496729. If you specify 0, counter data sampling is disabled. The default polling interval is 20 seconds.

Modes

Global configuration mode

Usage Guidelines

The polling interval defines how often sFlow byte and packet counter data for a port is sent to the sFlow collectors. If multiple ports are enabled for sFlow, the device staggers transmission of the counter data to smooth performance. For example, if sFlow is enabled on two ports and the polling interval is 20 seconds, the device sends counter data every 10 seconds. The counter data for one of the ports is sent after 10 seconds, and the counter data for the other port is sent after an additional 10 seconds. 10 seconds later, new counter data for the first port is sent.

The interval value applies to all interfaces on which sFlow is enabled.

The **no** form of the command returns the polling interval to the default value.

Examples

The following example sets the polling interval to 30 seconds.

```
device(config)# sflow polling-interval 30
```

sflow sample

Changes the default sampling rate.

Syntax

sflow sample *num*

no sflow sample *num*

Command Default

The default sampling rate is 4096 packets.

Parameters

num

Specifies the average number of packets from which each sample is taken. The software rounds the value that you enter to the next higher odd power of 2. Refer to the Usage Guidelines section for information on the range of supported values.

Modes

Global configuration mode

Interface configuration mode

LAG configuration mode

Usage Guidelines

NOTE
RUCKUS ICX 8200 devices configure the SFLOW sampling rate only in global configuration mode. ICX 8200 devices do, however, support SFLOW on Ethernet interfaces using the **sflow enable** and **sflow forwarding** commands in interface configuration mode.

The value range for the sampling rate is from 256 through 16777215

The sampling rate is a fraction in the form 1/N, meaning that, on average, one out of every N packets is sampled. The sflow sample command specifies N, the denominator of the fraction. Thus a higher number for the denominator means a lower sampling rate because fewer packets are sampled. Likewise, a lower number for the denominator means a higher sampling rate because more packets are sampled. For example, if you change the denominator from 4096 to 2048, the sampling rate increases because four times as many packets are sampled.

NOTE
Ruckus recommends that you do not change the denominator to a value lower than the default. Sampling requires CPU resources. Using a low denominator for the sampling rate can cause high CPU utilization.

The CPU-bound sFlow sample packets are rate-limited to 50 samples per second to avoid high CPU utilization.

The sampling rate must be set depending on input traffic rate. If the input traffic rate is more on the interface, the sampling rate must be configured to a higher value to keep the number of sample packets within the CPU rate limit. Else, the excess sample packets are dropped by the CPU.

The following examples show the ideal sample rate configurations for various input rates that keep the sample packets within the CPU rate limit.

- If the input traffic rate is 200,000 packets/sec, the interface sample rate must be set to 4096. (200000/4096 = less than 50 samples)
- If the input traffic rate is 400,000 packets/sec, the interface sample rate must be set to 8192. (400000/8192 = less than 50 samples)

You cannot change a module's sampling rate directly. You can change a module's sampling rate only by changing the sampling rate of a port on that module.

You can configure an individual port to use a different sampling rate than the global default sampling rate. This is useful when ports have different bandwidths.

You can configure individual LAG ports to use a different sampling rate than the global default sampling rate. For a keep-alive LAG, sFlow can be enabled only at the interface level and not at the LAG level.

When configuring the sample rate, if you configure the value as 1000, the software rounds the value to the next higher odd power of 2; so the actual rate is 2^11 (2048), and 1 in 2048 packets are sampled by the hardware.

The **no** form of the command resets the sampling rate to the default value.

Examples

The following example changes the default (global) sampling rate.

```
device(config)# sflow sample 2048
```

The following example changes the sampling rate on an individual port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# sflow sample 8192
```

The following example enables an sFlow sample rate in a LAG configuration.

```
device(config)# lag blue static id 1
device(config-lag-blue)# sflow sample 512
```

sflow source

Configures the sFlow source interface (IPv4 or IPv6) from which the IP source address is selected for the sFlow datagram.

Syntax

sflow source [**ipv6**] { **ethernet** *stackid/slot/port* | **ve** *ve-number* | **loopback** *number* }

no sflow source [**ipv6**] { **ethernet** *stackid/slot/port* | **ve** *ve-number* | **loopback** *number* }

Command Default

The sFlow source is not configured. The IP address of the outgoing interface is used in the sFlow datagram.

Parameters

ipv6
: Configures the IPv6 interface as the sFlow source. If **ipv6** is not specified, the IPv4 interface is automatically configured as the sFlow source.

ethernet *stackid/slot/port*
: Configures an Ethernet interface as the sFlow source interface.

ve *ve-number*
: Configures a virtual interface (VE) as the sFlow source interface.

loopback *number*
: Configures a loopback interface as the sFlow source interface.

Modes

Global configuration mode

Usage Guidelines

At any time, only one source of the Ethernet, VE, or loopback interface can be specified as the source interface.

The first IP address in the interface IP address list is considered the source IP address. Upon configuring another source for an IPv4 or IPv6 address, any previously configured source for the IPv4 or IPv6 address will be deleted. You can configure IPv4 and IPv6 source interfaces independently.

If the sFlow destination is IPv6, and the sFlow source is configured for an IPv6 address, then an IPv6 address will be selected from the configured interface. If the sFlow destination is IPv4, and the sFlow source is configured for an IPv4 address, then an IPv4 address will be selected from the configured interface.

The **no** form of the command removes the sFlow source configuration from the interface and restores the default behavior of using IP address of the outgoing interface as the source IP address of the sFlow datagram.

Examples

The following example configures an Ethernet interface to be used as the sFlow source IPv6 interface.

```
device(config)# sflow source ipv6 ethernet 1/1/2
```

The following example configures an Ethernet interface to be used as the sFlow source IPv4 interface.

```
device(config)# sflow source ethernet 1/1/3
```

History

Release version	Command history
08.0.30	This command was introduced.

sflow source-port

Configures the source sFlow UDP port.

Syntax

sflow source-port *num*

no sflow source-port

Command Default

sFlow sends data to the collector using UDP source port 8888.

Parameters

num

Specifies the sFlow source port. The value can range from 1025 through 65535.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command reverts the sFlow source port to its default port of 8888.

Examples

The following example changes the source UDP port to 8000.

```
device(config)# sflow source-port 8000
```

sflow version

Configures the version used for exporting sFlow data.

Syntax

sflow version *version-num*

no sflow version [*version-num*]

Command Default

When sFlow is enabled globally on the device, the sFlow agent exports sFlow data in version 5 format.

Parameters

version-num

Specifies the version number. The version can be 2 or 5.

Modes

Global configuration mode

Usage Guidelines

You can switch between versions without rebooting the device or disabling sFlow.

NOTE
When the sFlow version number is changed, the system resets sFlow counters and flow sample sequence numbers.

The **no** form of the command resets the sFlow verison to its default.

Examples

The following example sets the sFlow version to 2.

```
device(config)# sflow version 2
```

short-path-forwarding

Enables short-path forwarding on a Virtual Router Redundancy Protocol (VRRP) router.

Syntax

short-path-forwarding[**revert-priority** *number*]

no short-path-forwarding[**revert-priority** *number*]

Command Default

Short-path forwarding is disabled.

Parameters

revert-priority*number*

Allows additional control over short-path forwarding on a backup router. If you configure this option, the revert-priority number acts as a threshold for the current priority of the session, and only if the current priority is higher than the revert-priority will the backup router be able to route frames. The range of revert-priority is 1 to 254.

Modes

VRRP-E router configuration mode

Usage Guidelines

Short-path forwarding means that a backup physical router in a virtual router attempts to bypass the VRRP-E master router and directly forward packets through interfaces on the backup router.

This command can be used for VRRP-E, but not for VRRP. You can perform this configuration on a virtual Ethernet (VE) interface only.

Enter the **no short-path-forwarding** command to remove this configuration.

Examples

To enable short-path forwarding for a VRRP-E instance:

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# slow-start 40
device(config-vrrpe-router)# short-path-forwarding
```

To enable short-path forwarding for an IPv6 VRRP-E instance:

```
device# configure terminal
device(config)# interface ve 10
device(config-vif-10)# ip vrrp-extended vrid 100
device(config-vif-10-vrid-100)# backup
device(config-vif-10-vrid-100)# short-path-forwarding
```

History

Release version	Command history
10.0.00	Support for IPv6 was added.

Show Commands

show 802-1w

Displays the Rapid Spanning Tree Protocol (RSTP) (802.1W) information of the specified port-based VLAN.

Syntax

show 802-1w [**detail**] { *number* | **vlan** *vlan-id* { **ethernet** *stack-id/slot/port* **lag** *lag-id* } }

Parameters

detail

Displays detailed output.

number

Specifies the number of spanning tree entries to skip before the display begins.

vlan *vlan-id*

Displays the RSTP details for a specific VLAN.

ethernet *stack-id/slot/port*

Displays the RSTP details for a specific ethernet port.

lag *lag-id*

Displays the RSTP details for a specific LAG.

Modes

User EXEC mode

Examples

The following example shows the output of the **show 802-1w** command.

```
device# show 802-1w
--- VLAN 4 [ STP Instance owned by VLAN 4 ] ----------------------------
Bridge IEEE 802.1W Parameters:
Bridge             Bridge     Bridge     Bridge     Force       tx
Identifier         MaxAge     Hello      FwdDly     Version     Hold
hex                sec        sec        sec                                                    cnt
8000002022227700   20         2          15         Default    3
RootBridge         RootPath      DesignatedBri-    Root    Max    Fwd   Hel
Identifier         Cost          dge Identifier    Port    Age    Dly   lo
hex
hex                                              sec    sec   sec
8000002022227700   0             8000002022227700  Root    20     15    2
Port IEEE 802.1W Parameters:
<--- Config Params --><-------------- Current state ----------------->
Port    Pri    PortPath    P2P     Edge      Role       State       Designa-     Designated
Num            Cost        Mac     Port                             ted cost     bridge
1/1/1   128    20000       F       F         DESIGNATED FORWARDING  0            8000002022227700
--- VLAN 5 [ STP Instance owned by VLAN 5 ] ----------------------------
Bridge IEEE 802.1W Parameters:
Bridge           Bridge     Bridge       Bridge     Force       tx
Identifier       MaxAge     Hello        FwdDly     Version     Hold
hex              sec        sec          sec                    cnt
8000002022227700 20         2            15         Default     3
RootBridge       RootPath       DesignatedBri-      Root    Max   Fwd   Hel
Identifier       Cost           dge Identifier      Port    Age   Dly   lo
hex                             hex                        sec   sec   sec
8000002022227700 0              8000002022227700    Root    20    15    2
Port IEEE 802.1W Parameters:
<--- Config Params --><-------------- Current state ----------------->
Port     Pri    PortPath    P2P    Edge       Role        State       Designa-      Designated
Num             Cost        Mac    Port                               ted cost      bridge
1/1/1    128    20000       F      F          DESIGNATED  FORWARDING  0             8000002022227700
--- VLAN 6 [ STP Instance owned by VLAN 6 ] ----------------------------
Bridge IEEE 802.1W Parameters:
Bridge           Bridge     Bridge        Bridge     Force        tx
Identifier       MaxAge     Hello         FwdDly     Version      Hold
hex              sec        sec           sec                     cnt
8000002022227700 20         2             15         Default      3
RootBridge       RootPath     DesignatedBri-     Root       Max   Fwd   Hel
Identifier       Cost         dge Identifier     Port       Age   Dly   lo
hex                           hex                           sec   sec   sec
8000002022227700 0            8000002022227700   Root       20    15    2
Port IEEE 802.1W Parameters:
<--- Config Params --><-------------- Current state ----------------->
Port   Pri     PortPath    P2P     Edge       Role        State       Designa-       Designated
Num            Cost        Mac     Port                               ted cost       bridge
1/1/1  128     20000       F       F          DESIGNATED  FORWARDING  0              8000002022227700
```

The following example displays the detailed RSTP (802.1W) information.

```
device# show 802-1w detail
========================================================================
VLAN 1 - SPANNING TREE (IEEE 802.1W) ACTIVE
========================================================================
BridgeId 800000a0c9c002a0, forceVersion 2, txHoldCount 3

Number of topology changes: 53
Last topology change occured 13 minute(s) 30 second(s)  ago on lg40
Port 1/1/1 - Role: DESIGNATED - State: FORWARDING
  PathCost 20000, Priority 128, AdminOperEdge F, AdminPt2PtMac F
  DesignatedPriority - Root: 0x800000a0c9c002a0, Bridge: 0x800000a0c9c002a0
  ActiveTimers - helloWhen 0
  MachineStates - PIM: CURRENT, PRT: DESIGNATED_PORT, PST: FORWARDING
                  TCM: ACTIVE, PPM: SENDING_RSTP, PTX: TRANSMIT_IDLE
  Received - RST BPDUs 0, Config BPDUs 0, TCN BPDUs 0
```

History

Release version	Command history
10.0.00	This command was modified to display more topology information details.

show aaa

Displays information about all TACACS+ and RADIUS servers identified on the device.

Syntax

show aaa

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show aaa** command displays the following information:

Output field	Description
Tacacs+ key	The setting configured with the **tacacs-server key** command. At the Super User privilege level, the actual text of the key is displayed. At the other privilege levels, a string of periods (....) is displayed instead of the text.
Tacacs+ retries	The setting configured with the **tacacs-server retransmit** command.
Tacacs+ timeout	The setting configured with the **tacacs-server timeout** command.
Tacacs+ dead-time	The setting configured with the **tacacs-server dead-time** command.
Tacacs+ Server	For each TACACS/TACACS+ server, the IP address, port, and the following statistics are displayed: • opens - Number of times the port was opened for communication with the server • closes - Number of times the port was closed normally • timeouts - Number of times the port was closed due to a timeout • errors - Number of times an error occurred while opening the port • packets in - Number of packets received from the server • packets out - Number of packets sent to the server
connection	The current connection status. This can be "no connection" or "connection active".
Radius key	The setting configured with the **radius-server key** command. At the Super User privilege level, the actual text of the key is displayed. At the other privilege levels, a string of periods (....) is displayed instead of the text.
Radius retries	The setting configured with the **radius-server retransmit** command.
Radius timeout	The setting configured with the **radius-server timeout** command.

Output field	Description
Radius Server	For each RADIUS server, the IP address, and the following statistics are displayed: • Auth Port - RADIUS authentication port number (default 1645) • Acct Port - RADIUS accounting port number (default 1646) • opens - Number of times the port was opened for communication with the server • closes - Number of times the port was closed normally • timeouts - Number of times the port was closed due to a timeout • errors - Number of times an error occurred while opening the port • packets in - Number of packets received from the server • packets out - Number of packets sent to the server
connection	The current connection status. This can be "no connection" or "connection active".

Examples

The following example displays information about all TACACS/TACACS+ and RADIUS servers identified on the device.

```
device(config)# show aaa
Tacacs+ key: foundry
Tacacs+ retries: 1
Tacacs+ timeout: 15 seconds
Tacacs+ Server: 10.95.6.90 Port:49:
            opens=6 closes=3 timeouts=3 errors=0
            packets in=4 packets out=4
no connection
Radius key: networks
Radius retries: 3
Radius timeout: 3 seconds
Radius Server: 10.95.6.90 Auth Port=1645 Acct Port=1646:
            opens=2 closes=1 timeouts=1 errors=0
            packets in=1 packets out=4
no connection
```

show access-list all

Displays access control list (ACL) status information for all named and numbered ACLs.

Syntax

show access-list { **all** }

Parameters

all

Displays information about all ACLs.

Modes

User EXEC mode

Usage Guidelines

From FastIron release 08.0.50, sequence numbers are automatically added to existing ACL rules in the following manner:

- The first rule within each ACL is numbered 10.
- The sequence number for each succeeding rule is incremented by 10.

Examples

The following example shows sample output from the **show access-list all** command.

```
device# show access-lists all
Extended IP access list 100 (Total flows: N/A, Total packets: N/A, Total rule cam use: 3)
10: permit udp host 192.168.2.169 any (Flows: N/A, Packets: N/A, Rule cam use: 1)
20: permit icmp any any (Flows: N/A, Packets: N/A, Rule cam use: 1)
30: deny ip any any (Flows: N/A, Packets: N/A, Rule cam use: 1)
```

History

Release version	Command history
08.0.40	The command was modified. ACL names are no longer supported as an optional argument.
08.0.50	The command was modified so that sequence numbers are automatically added to existing rules.
08.0.95	The command was modified to remove hw-usage and named-acl options.

show access-list accounting

Displays the access control list (ACL) accounting statistics for IPv4 ACLs, IPv6 ACLs, and Layer 2 MAC ACLs.

Syntax

show access-list accounting { **ethernet** *id* | **lag** *id* | **vlan** *id* } [**in** | **out**] [**ipv4** | **ipv6** | **mac**] [**brief** | **detail**]

show access-list accounting { **ethernet** *id* | **lag** *id* | **vlan** *id* } [**in**] [**brief** | **detail**]

show access-list accounting vlan *id* **lag** *id* [**in**] [**ipv4** | **ipv6** | **mac**] [detail]

Parameters

{ **ethernet** *id* | **lag** *id* | **vlan** *id* }
: Displays information for the specified interface type and ID.

in
: Displays the statistics of the inbound ACLs. If no direction is set, statistics for both inbound and outbound are shown, if available.

out
: Displays the statistics of the outbound ACLs. If no direction is set, statistics for both inbound and outbound are shown, if available.

ipv4
: Displays the statistics for IPv4 ACLs. Statistics for both IPv4, IPv6, MAC ACLs are shown if this value is not set.

ipv6
: Displays the statistics for IPv6 ACLs. Statistics for IPv4, IPv6,and MAC ACLs are shown if this value is not set.

mac
: Displays the statistics for MAC ACLs.

brief
: Displays a short summary report.

detail
: Displays a detailed report.

Modes

All modes

Usage Guidelines

The output displayed gives information about ACLs based on the configuration of the port or interface. If both IPv4 and IPv6 ACLs are configured on the same port, the output provides IPv4, IPv6, and MAC ACL accounting information, unless only IPv4, IPv6, or MAC is specified in the command.

You can display information for an entire VLAN or for a LAG within the VLAN. Use the **show access-list accounting vlan** *id* **lag** *id* **in** detail command form to display information about a specific LAG within the context of the VLAN.

Examples

The following example displays a summary of ACLs that are active on VLAN 333.

```
device# show access-list accounting vlan 333 in brief
ACL Accounting Table
================================================================================================================================
================================================
UnitID: 1 ACL Name: mirror_acl_l2     HitCnt: 0   ByteCnt: 0
UnitID: 1 ACL Name: mirror_acl_ipv4   HitCnt: 0   ByteCnt: 0
UnitID: 1 ACL Name: mirror_acl_ipv6   HitCnt: 0   ByteCnt: 0
UnitID: 2 ACL Name: mirror_acl_l2     HitCnt: 0   ByteCnt: 0
UnitID: 2 ACL Name: mirror_acl_ipv4   HitCnt: 0   ByteCnt: 0
UnitID: 2 ACL Name: mirror_acl_ipv6   HitCnt: 0   ByteCnt: 0
UnitID: 3 ACL Name: mirror_acl_l2     HitCnt: 0   ByteCnt: 0
UnitID: 3 ACL Name: mirror_acl_ipv4   HitCnt: 0   ByteCnt: 0
UnitID: 3 ACL Name: mirror_acl_ipv6   HitCnt: 0   ByteCnt: 0
```

The following example displays a summary of IPv4 ACLs on VLAN 333.

```
device# show access-list accounting vlan 333 in ipv4 brief
ACL Accounting Table
================================================================================================================================
================================================
UnitID: 1 ACL Name: mirror_acl_ipv4     HitCnt: 0     ByteCnt: 0
UnitID: 2 ACL Name: mirror_acl_ipv4     HitCnt: 0     ByteCnt: 0
UnitID: 3 ACL Name: mirror_acl_ipv4     HitCnt: 0     ByteCnt: 0
```

The following example displays a summary of IPv6 ACLs on VLAN 333.

```
device# show access-list accounting vlan 333 in ipv6 brief
ACL Accounting Table
================================================================================================================================
================================================
UnitID: 1 ACL Name: mirror_acl_ipv6     HitCnt: 0     ByteCnt: 0
UnitID: 2 ACL Name: mirror_acl_ipv6     HitCnt: 0     ByteCnt: 0
UnitID: 3 ACL Name: mirror_acl_ipv6     HitCnt: 0     ByteCnt: 0
```

The following example displays detailed information for ACLs applied to LAG 25 in VLAN 333.

```
device# show access-list accounting vlan 333 lag 25 in detail
ACL Accounting Table
================================================================================================================
================================================
ACL Name: vlan333-ipv4
UnitID: 2 Region: 0 Filter Seq Num: 5  Filter Def: deny tcp 44.44.44.0 0.0.0.255 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 12 Filter Def: permit ip 32.32.32.0 0.0.0.255 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 14 Filter Def: deny ip host 13.13.13.10 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 24 Filter Def: deny tcp 32.32.32.0 0.0.0.255
  range 10 20 any range 50 60 mi
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 36 Filter Def: permit udp any any log mirror
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter SeUnitID: 2 Region: 0 Filter Seq Num: 228 Filter Def:
  permit tcp host 33.3.4.82 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 240 Filter Def: permit tcp host 33.3.4.83 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 252 Filter Def: permit tcp host 33.3.4.85 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 264 Filter Def: permit tcp host 33.3.4.86 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 276 Filter Def: permit tcp host 33.3.4.87 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 288 Filter Def: permit tcp host 33.3.4.88 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 300 Filter Def: permit tcp host 33.3.4.89 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 312 Filter Def: permit tcp host 33.3.4.90 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 324 Filter Def: permit tcp host 33.3.4.91 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 336 Filter Def: permit tcp host 33.3.4.92 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 348 Filter Def: permit tcp host 33.3.4.93 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 672 Filter Def: permit tcp host 1234::19 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 684 Filter Def: permit tcp host 1234::20 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 696 Filter Def: permit tcp host 1234::21 any
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 708 Filter Def: permit tcp host 1234::22 any
  HitCnt: 0     ByteCnt: 0
```

The following example displays detailed information on IPv6 ACLs applied to LAG 25 in VLAN 333.

```
device# show access-list accounting vlan 333 lag 25 in ipv6 detail
ACL Accounting Table
================================================================================================================
================================================
ACL Name: vlan333-ipv6
UnitID: 2 Region: 0 Filter Seq Num: 2 Filter Def: permit ipv6 host 3332::100 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 3 Filter Def: permit udp any any log mirror
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 6 Filter Def: permit ipv6 host 3332::100 any
  dscp-matching 33 802.1p-prior
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 12 Filter Def: deny tcp host 3332::100 any mirror
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 13 Filter Def: deny ipv6 host 1221::100 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 14 Filter Def: deny udp host 1221::100 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 15 Filter Def: deny tcp host 1221::100 any log
  HitCnt: 0     ByteCnt: 0
UnitID: 2 Region: 0 Filter Seq Num: 24 Filter Def: permit ipv6 host 3332::100 any
  HitCnt: 0     ByteCnt: 0
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.61	This command was modified to add **lag** *lag-id* options.
08.0.70	This command was modified to support outbound ACL accounting for IPv4 and IPv6 ACLs.
08.0.95	This command was modified to remove the *id*, **traffic-policy**, and **ve** options. It was also modified to improve the presentation of accounting details.

show access-list tcam

Displays where port ACLs are programmed in TCAM, how many rules, including the default rule, are configured for each ACL, and which direction each ACL is applied.

Syntax

show access-list tcam { **acl-name** *name* } [**detail**]

show access-list tcam { **usage unit** *id* }

show access-list tcam { **interface ethernet** *unit/slot/port* | **Interface lag** *id* } [**detail**]

show access-list tcam { **ingress unit** | **egress unit** *id* } [**detail**]

show access-list tcam { **rule statistics** *id* **unit** *unit/slot/port* **region** *region-id* } [**detail**]

show access-list tcam { **rule** *id* **unit** *unit/slot/port* **region** *region-id* } [**detail**]

Parameters

{ **acl-name** *name* }
: Displays TCAM information for the designated ACL.

{ **usage unit** *id* }
: Displays information on TCAM usage for a specific unit.

{ **interface ethernet** *unit/slot/port* | **Interface lag** *id* }
: Displays TCAM information for a specified Ethernet or LAG interface.

{ **ingress unit** | **egress unit** *id* }
: Displays a list of rules programmed on a particular unit, including default rules.

{ **rule statistics** *id* **unit** *unit/slot/port* **region** *region-id* }
: Displays accounting information for hardware-level statistics.

{ **rule** *id* **unit** *unit/slot/port* **region** *region-id* }
: Displays detailed output for each rule programmed in TCAM. Output is local to each unit.

[**detail**]
: Displays all rules for a particular ACL with sequence number and port details.

Modes

User EXEC mode

Examples

The following example provides TCAM information for the ACL 136. The **show access-list tcam***acl-name* command shows which ports have the ACL programmed in TCAM, the type of ACL, which direction the ACL is applied, and how many rules, including the default rule, are programmed in TCAM for the ACL.

```
device(config-vlan-222)# show access-list tcam acl-name 136 (ACL NAME)
Ingress
UnitId Feature   SRule ERule Filters Contiguous RefCnt Bind If
------ -------   ----- ----- ------- ---------- ------ -------
1      UACL-IPv4 1123  2125  1003    YES        1      e 1/1/18
2      UACL-IPv4 1123  2125  1003    YES        1      e 2/1/18
```

The following example provides detailed information for the same ACL. The detailed information includes ACL rules and associated ACL sequence numbers and ports.

```
device(config-vlan-222)# show access-list tcam acl-name 136 detail
Ingress:
UnitId Region Feature   Filter ID Rule  RefCnt Bind If
------ ------ -------   --------- ----- ------ -------
1      0      UACL-IPv4  8        1123  1      e 1/1/18
1      0      UACL-IPv4 10        1124  1      e 1/1/18
1      0      UACL-IPv4 20        1125  1      e 1/1/18
1      0      UACL-IPv4 30        1126  1      e 1/1/18
1      0      UACL-IPv4 40        1127  1      e 1/1/18
1      0      UACL-IPv4 50        1128  1      e 1/1/18
1      0      UACL-IPv4 60        1129  1      e 1/1/18
1      0      UACL-IPv4 70        1130  1      e 1/1/18
1      0      UACL-IPv4 80        1131  1      e 1/1/18
```

The following example displays TCAM usage for stack unit 1. This output is available on ICX 7550 and ICX 7850 devices.

```
UnitId Region Group Id   Direction       Type               : Allocated  Total   Free
------ ------ --------   ---------       ----               : ---------  -----   ----
1      0      1          Pre-Ingres      L2_IPv4 FIlters    : 1          1536    1535
1      0      2          Pre-Ingres      VCAP_MISC          : 0          1536    1536
1      0      3/4        Ingress         IPv4/v6 Filters    : 8/0        2048    2040
1      0      5          Ingress         L2 Filters         : 30         2048    2018
1      0      6          Ingress         ICAP All Combo     : 58         2048    1990
1      0      7          Egress          IPv4 Filters       : 1          256     255
1      0      8          Egress          IPv6 Filters       : 1          256     255
1      0      9          Egress          L2 Filters         : 5          256     251
```

The following example displays TCAM usage for stack unit 1 on an ICX 8200 device.

```
UnitId Region Group Id   Direction       Type               : Allocated  Total      Free
------ ------ --------   ---------       ----               : ---------  -----      ----
1      0      0          Pre-Ingres      VCAP_MISC          : 1          129        128
1      0      1          Ingress         IPv4 Filters       : 6          1024       1018
1      0      2          Ingress         IPv6 Filters       : 1          512        511
1      0      3          Ingress         L2 Filters         : 31         512        481
1      0      4          Ingress         ICAP All Combo     : 53         256        203
1      0      5          Egress          IPv4 Filters       : 1          128        127
1      0      6          Egress          IPv6 Filters       : 1          128        127
1      0      7          Egress          L2 Filters         : 6          256        250
```

The following example displays TCAM information for a specified interface. Use this command to verify ACLs applied on an interface and how many filters are programmed in TCAM for each ACL.

```
device# show access-list tcam interface ethernet 4/1/10
Ingress:
UnitId AclName      Feature    SRule ERule  Filters Contiguous Merged Acl
------ -------      -------    ----- -----  ------- ---------- ---------
4      STK_ZTP_0403 ZTP         36    36    1       YES
4      STK_IPC_0401 STK_HIGIG    5     5    1       YES
4      123          UACL-IPv4   84   104   21       YES
4      mac_acl      UACL-MAC   105   115   11       YES

Egress:
UnitId AclName      Feature    SRule ERule Filters Contiguous Merged Acl
------ -------      -------    ----- ----- ------- ---------- ---------
4      140          UACL-IPv4  128   129    2      YES
4      egress       UACL-IPv6  118   127   10      YES
```

The following example displays more detailed information for the same interface, including all rules and filters (by sequence number) for each ACL bound to the interface.

```
device# show access-list tcam interface ethernet 4/1/10 detail
Ingress:
UnitId Region AclName        Feature     Filter Id Rule
------ ------ -------        -------     --------- -----
4      1      STK_ZTP_0403   ZTP         1         36
4      1      STK_IPC_0401   STK_HIGIG   1          5
4      1      123            UACL-IPv4  10         84
4      1      123            UACL-IPv4  20         85
4      1      123            UACL-IPv4  30         86
4      1      123            UACL-IPv4  40         87
4      1      123            UACL-IPv4  50         88
```

The following example displays TCAM information for a specified LAG interface.

```
device# show access-list tcam interface lag 8060
Ingress:
UnitId AclName     Feature       SRule  ERule Filters Contiguous Merged Acl
------ -------     -------       -----  ----- ------- ---------- ---------
2      qos_dscp_34 QOS-DSCP/PCP   909    909  1       YES
3      qos_dscp_34 QOS-DSCP/PCP   907    907  1       YES

Egress:
UnitId AclName     Feature       SRule  ERule Filters Contiguous Merged Acl
------ -------     -------       -----  ----- ------- ---------- ---------
2      125         UACL-IPv4      1587   1822 236     YES
2      egress      UACL-IPv6      1823   2026 204     YES
3      125         UACL-IPv4      1585   1820 236     YES
3      egress      UACL-IPv6      1821   2024 204     YES
device#
```

The following example displays detailed information for the same LAG.

```
device# show access-list tcam interface lag 8060 detail
Ingress:
UnitId Region AclName     Feature      Filter Id Rule
------ ------ -------     -------      --------- -----
2      0      qos_dscp_34 QOS-DSCP/PCP 10        909
3      0      qos_dscp_34 QOS-DSCP/PCP 10        907

Egress:
UnitId Region AclName     Feature      Filter Id Rule
------ ------ -------     -------      --------- -----
2      0      125         UACL-IPv4      2       1587
2      0      125         UACL-IPv4    110       1588
2      0      125         UACL-IPv4    120       1589
```

The following example displays a list of all ACLs and associated rules, including default rules, programmed on a unit 1 in an inbound direction.

```
device# show access-list tcam ingress unit 1

Ingress:
UnitId AclName                          Feature      SRule ERule    Filters Contiguous RefCnt Bind If
------ -------                          -------      ----- -----    ------- ---------- ------ -------
1 SFLOW_RULE                            SFLOW         34       34       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 INGRESS_CPU_RULE                      CPU_RULES      5        5       1    YES        33     e 1/1/1 to
1/1/24 e 1/2/1 to 1/2/8
1 MANAGEMENT                            UACL-IPv4   3165     3356     192    YES         1     e 1/1/2
1 SYS_MGMT_VLAN                         VLAN           6        6       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYSTEM-L3-UDP-BC                      UDP_BC        35       35       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SPX_ZTP_0402                          SPX_IPC_MAC   36       36       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 STK_ZTP_0403                          ZTP           37       37       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 STK_IPC_0401                          STK_HIGIG      7        7       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 MCAST_ACL_RULES_IGMP                  IGMP          38       38       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 MCAST_ACL_RULES_PIM_V4                PIMV4         39       39       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 MCAST_ACL_RULES_RES_MC_V4             RES_MC_V4     40       40       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 MCAST_ACL_RULES_SC_SP_MLD_V1          MLD           41       41       2    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 MCAST_ACL_RULES_SC_SP_MLD_V2          MLD           44       44       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 MCAST_ACL_RULES_SC_SP_PIM_V6          PIMV6         45       45       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYS_CPU_VLAN_BPDU                     VLAN          46       46       1    YES         1
1 SYS_PVST                              XSTP          47       47       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYS_MRP                               MRP            8        8       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYS_UDLD                              UDLD           9        9       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYS_EOAM_LOOPBACK                     EOAM          48       48       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYS_SMAC_SUP                          FDB           10       10       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYSTEM-L3-IPV6-RES-MC                 IPV6_RES_MC   49       49       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYSTEM-L3-IRDP                        IRDP           1        1       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYSTEM-L3-ARP-PRIORITY                ARP           11       11       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 FLEXAUTH_802.1X_BPDU_RULE_UNIT_1      FLEXAUTH      50       50       1    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYS_PROTO_REPRIO                      L2_PROTO      51       52       2    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 L2MCAST-ACL-RULES-SPATHA-SICA-UMC-V6  MC_UMC        53       55       3    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 SYSTEM-L3-ND                          ND            56       58       3    YES        30     e 1/1/1 to
1/1/24 e 1/2/2 e 1/2/4 to 1/2/8
1 scale22                               UACL-IPv6   2357     3160     804    YES         2     e 1/1/11 e
1/2/2
1 131                                   UACL-IPv4   3161     3164       4    YES         2     e 1/1/11 e
1/2/2
```

The following example displays TCAM information for ACLs applied in an outbound direction on unit 1. The command shows all ACLs programmed in TCAM for the specified unit in the specified direction, including system default rules.

```
device# show access-list tcam egress unit 1
Egress:
UnitId AclName           Feature    SRule ERule Filters Contiguous RefCnt Bind If
------ -------           -------    ----- ----- ------- ---------- ------ -------
1      ECPU_PORTID_RULE  CPU_RULES   84    85    2       YES        1
1      ECPU_CLASSID_RULE CPU_RULES   86    86    1       YES        1
device#
```

The **show access-list tcam rule-statistics** command is used to fetch hardware-level accounting statistics. The output is displayed for a specific rule in a specific region on a specific unit.

```
device# show access-list tcam rule-statistics 3161 unit 1 region 0
Rule: 3161 Stat: 0
device#
```

The **show access-list tcam rule** command displays detailed output for each rule programmed in TCAM. The command is local to each unit. The following example displays information on rules for region 0 of unit 1.

```
device# show access-list tcam rule 3161 unit 1 region 0
EID 0x00000c59: gid=0x3,
slice=0, slice_idx=0xc9, part =0 prio=0x1fe0216, flags=0x210602, Installed, Enabled
tcam: color_indep=1,
StageIngress
InPorts
DATA=0x00000000000000000000000000000000000000000000000000008000000000800
MASK=0x00000000000000000000000000000000000000000000000003fe000001ffffff
Stage
IpType
Offset0: 325 Width0: 4
DATA=0x00000000
MASK=0x0000000e
InterfaceClassL2
Offset0: 32 Width0: 12
DATA=0x0000000e
MASK=0x00000fff
action={act=CosQCpuNew, param0=31(0x1f), param1=0(0x00), param2=0(0x00), param3=0(0x00)}
action={act=SwitchToCpuCancel, param0=0(0x00), param1=0(0x00), param2=0(0x00), param3=0(0x00)}
action={act=DynamicHgTrunkCancel, param0=0(0x00), param1=0(0x00), param2=0(0x00), param3=0(0x00)}
action={act=Drop, param0=0(0x00), param1=0(0x00), param2=0(0x00), param3=0(0x00)}
policer=
statistics={stat id 3079 slice = 6 idx=0 entries=1}{Packets}{Bytes}
device#
```

The following example displays TCAM information for the ACL cpu-ipv4 applied to incoming traffic on the CPU of the active controller for the stack.

```
device# configure terminal
device(config)# interface cpu active
device(config-if-cpu-active)# ip access-group cpu-ipv4 in

device(config-if-cpu-active)# show access-list tcam acl-name cpu-ipv4
Egress:
UnitId Feature   SRule ERule Filters Contiguous RefCnt Bind If
------ -------   ----- ----- ------- ---------- ------ -------
1      UACL-IPv4 2218  2220  3       YES        1
2      UACL-IPv4 1250  1252  3       YES        1
```

History

Release version	Command history
08.0.95	This command was introduced.

show acl-on-arp

Displays the list of ACLs that are configured to filter ARP requests.

Syntax

show acl-on-arp[**ethernet***unit/slot/port*[**to***unit/slot/port*]...]|**loopback***num*|**tunnel***num*|**ve***num*]

Parameters

ethernet*unit/slot/port*

Displays the list of ACLs that are configured to filter ARP requests on a specific Ethernet interface.

to*unit/slot/port*

Displays the list of ACLs that are configured to filter ARP requests on a range of Ethernet interfaces.

loopback*num*

Displays the list of ACLs that are configured to filter ARP requests on a specific loopback interface.

tunnel*num*

Displays the list of ACLs that are configured to filter ARP requests on a specific tunnel interface.

ve*num*

Displays the list of ACLs that are configured to filter ARP requests on a specific VE interface.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Access list configuration mode

Usage Guidelines

The Filter Count column shows how many ARP packets have been dropped on the interface since the last time the count was cleared.

Examples

The following example displays a sample output of the **show acl-on-arp** command.

```
device(config)# show acl-on-arp
Port    ACL ID        Filter Count
2        103          10
3        102          23
4        101          12
```

History

Release version	Command history
08.0.61	This command was modified to add **lag***lag-id* options.
09.0.00	This command was modified to remove **lag***lag-id* options.

show arp

Displays the Address Resolution Protocol (ARP) table.

Syntax

show arp [*ip-addr* [*ip-mask*] [**detail**] | *decimal* | **dynamic** | **ethernet** *unit/slot/port* | **lag** *lag-id* | **mac-address** *mac-address* [*mac-address*] | **management** *port-number* | **pending** | **resource** | **static** | **statistics** | **summary** | **ve** *ve-number* [**dynamic** | **pending** | **summary**]]

show arp vrf *vrf-name* [*ip-addr*[*ip-mask*][**detail**]|*decimal* |**dynamic**|**ethernet***unit/slot/port*|**lag***lag-id*|**mac-address***mac-address*[*mac-address*]|**pending**|**static**|**summary**]

Parameters

ip-addr
Specifies an IP address.

ip-mask
Specifies the IPv4 mask.

detail
Specifies detailed information.

decimal
Specifies the number of entries to skip.

dynamic
Specifies dynamic ARPs.

ethernet *unit/slot/port*
Specifies an Ethernet interface.

lag *lag-id*
Specifies a LAG interface.

mac-address *mac-address* [*mac-address*]
Limits the output to the ARP entry that contains the specified MAC address.

management *port-number*
Specifies a management port.

pending
Specifies pending ARPs.

resource
Specifies resource information.

static
Specifies static ARPs.

statistics
Specifies ARP statistics.

summary
Specifies summarized information.

ve *ve-number*

Specifies a Virtual Ethernet (VE) interface.

vrf *vrf-name*

Specifies ARP entries belonging to a given VRF instance.

Modes

User EXEC mode

Usage Guidelines

The **ve** option is not available for stack member units.

You may enter a second MAC address without re-entering the **mac-address** keyword to display information for two ARP entries.

Command Output

The **show arp** command displays the following information:

Output field	Description
IP Address	The IP address of the entry.
MAC Address	The MAC address of the entry.
Type	ARP entry type. The options are : • Static: The Layer 3 switch loaded the entry from the static ARP table when the device for the entry was connected to the Layer 3 switch. • Dynamic: The Layer 3 switch learned the entry from an incoming packet. • DHCP: The Layer 3 Switch learned the entry from the DHCP binding address table. In this case, the port number is not available until the entry gets resolved through ARP.
Age	The number of minutes since the ARP entry was refreshed. If this value reaches the defined ARP aging period, the entry is removed from the table. Static entries do not age out.
Port	Port associated with the ARP entry.
Status	Status of the ARP entry, either valid or pending.
ARP entries per interface	The number of ARP entries for each interface.
Dynamic	The number of dynamic ARP entries.
Pending	The number of pending ARP entries.
Interface	The type and number of a specific interface.
Pending count	The number of pending ARP entries.
Dynamic count	The number of dynamic ARP entries.
Static count	The number of static ARP entries.

Examples

The following example displays the ARP table.

```
device> show arp

Total number of ARP entries: 3
Entries in default routing instance:
No.   IP Address       MAC Address    Type     Age Port              Status
1     10.176.150.129   02e0.52cb.55c8 Dynamic  0    mgmt1            Valid
2     10.1.1.2         903a.7205.07c0 Dynamic  1    1/1/5            Valid
3     10.1.1.3         000a.000b.000c Static   0    1/1/5            Valid
```

The following example displays detailed ARP information.

```
device> show arp detail

Total number of ARP entries: 3
Entries in default routing instance:
No.   IP Address       MAC Address    Type     Age Port        VLAN       Status
1     10.176.150.129   02e0.52cb.55c8 Dynamic  0    mgmt1      1          Valid
2     10.1.1.2         903a.7205.07c0 Dynamic  1    1/1/5      100        Valid
3     10.1.1.3         000a.000b.000c Static   0    1/1/5      100        Valid
```

The following example shows ARP resource information.

```
device> show arp resource

4 ARPs in table, maximum #: 61000
```

The following example shows summarized ARP information.

```
device> show arp summary

Printing summary for default vrf:
Pending count   : 0
Dynamic count   : 2
Static count    : 2
```

The following example shows summarized ARP information for a VE interface for a Layer 3 router.

```
device> show arp ve 10 summary

Interface    : ve 10
Dynamic ARP    : 7
Pending ARP    : 3
```

The following example shows ARP statistics.

```
device> show arp statistics

 ARP packets Tx/Rx in the last few sec:
                     ARP  REQ             ARP REP
                   TX        RX        TX        RX
5     sec :        3         20        5         0
30    sec :        9         122       30        0
60    sec :        18        245       61        0
300   sec :        112       1225      302       8
```

The following example shows dynamic ARP information.

```
device> show arp dynamic

No.   IP Address       MAC Address    Type     Age Port              Status
1     10.177.114.129   02e0.5297.56a0 Dynamic  0    mgmt1            Valid
2     10.177.114.130   cc4e.2445.1e00 Dynamic  2    mgmt1            Valid
3     10.177.114.131   cc4e.2445.0400 Dynamic  0    mgmt1            Valid
4     30.30.30.1       903a.7205.3b18 Dynamic  2    1/1/3            Valid
5     30.30.31.1       903a.7205.3b18 Dynamic  2    1/1/3            Valid
```

The following example shows pending ARP information.

```
device> show arp pending

Number of pending entries 1
No.   IP Address       MAC Address    Type        Age   Port              Status
1      10.1.1.52       None           Dynamic     0      v10              Pend
```

The following example shows static ARP information.

```
device> show arp static

No.   IP Address       MAC Address    Type     Age Port              Status
1     10.1.1.50        000a.000b.000c Static   0    1/1/1            Valid
2     10.1.1.51        000a.000c.000d Static   0    1/1/1            Valid
```

History

Release version	Command history
08.0.95	The *decimal*, **detail**, **dynamic**, **pending**, **static**, **statistics**, **summary**, and **ve** options were added.
09.0.00	The **inspect** option was removed.

show authentication acls

Displays information about currently active user-defined and dynamically applied ACLs.

Syntax

show authentication acls { **all** | **ethernet** { *unit* / *slot* / *port* } | **unit** *unit_number* }

Parameters

all

Shows ACLs for all stack units or for a standalone unit.

ethernet { *unit* / *slot* / *port* }

Shows ACLs for an interface or range of interfaces.

unit *unit_number*

Shows ACLs for the stack unit specified.

Modes

Privileged EXEC mode or any configuration mode

Examples

The following example displays information on ACLs for all interfaces in the standalone unit or in the stack.

```
device# show authentication acls all
-------------------------------------------------------------------------------
Port MAC Address     V4 Ingress V4 Egress V6 Ingress V6 Egress
-------------------------------------------------------------------------------
1/1/7 0180.c200.0003 -          -         -          -
1/1/8 0100.c200.0003 10         11        v6in       v6out
1/1/9 0200.c200.0003 100        101       v6in       v6out
```

The following example displays information on ALCs for stack unit 1.

```
device# show authentication acls unit 1
-------------------------------------------------------------------------------
Port MAC Address     V4 Ingress V4 Egress V6 Ingress V6 Egress
-------------------------------------------------------------------------------
1/1/7 0180.c200.0003 -          -         -          -
1/1/8 0100.c200.0003 10         11        v6in       v6out
1/1/9 0200.c200.0003 100        101       v6in       v6out
```

The following example displays information on ACLs for port 1/1/9.

```
device# show authentication acls ethernet 1/1/9
-------------------------------------------------------------------------------
Port  MAC Address    V4 Ingress V4 Egress V6 Ingress V6 Egress
-------------------------------------------------------------------------------
1/1/9 0200.c200.0003 100        101       v6in       v6out
```

History

Release version	Command history
08.0.80	This command was introduced.

show authentication configuration

Displays the 802.1X and MAC authentication configuration for the device or the specified interface.

Syntax

show authentication configuration [**all** | **ethernet** { *unit* / *slot* / *port* }]

Parameters

ethernet { *unit* / *slot* / *port* }

Displays authentication configuration for the specified port.

all

Displays authentication configuration for all Flexible authentication ports.

Modes

All modes.

Usage Guidelines

The **show authentication configuration** command without parameters displays global configuration information for the ICX device.

Examples

The following example displays configuration details for global authentication.

```
device# show auth configuration
Auth:
  Auth Order                    : mac-auth dot1x
  Default VLAN                  : 10
  Default Voice VLAN            : Not configured
  Auth Mode                     : Multiple Untagged Mode
  Restricted VLAN               : Not configured
  Critical VLAN                 : Not configured
  Auth Failure Action           : Block traffic
  Auth Timeout Action           : Treat as a successful authentication
  MAC Session Aging             : Enabled
  Re-authentication             : Enabled
  Reauth-period                 : 180 seconds
  Reauth-timeout                : 120 seconds
  Session Max SW-Age            : 120 seconds
  Session Aax HW-Age            : 70 seconds
  Max Sessions                  : 2
MAC-Auth:
  Status                        : Enabled
  802.1X Override               : Enabled
  Password Override             : Disabled
  Password Format               : xxxx.xxxx.xxxx
802.1X:
  Status                        : Enabled
  Protocol Version              : 1
  PAE Capability                : Authenticator Only
  MAC-Auth Override             : Disabled
  Guest VLAN                    : Not configured
  Quiet-period                  : 60 seconds
  TX-period                     : 30 seconds
  Supplicant-timeout            : 30 seconds
  Max Reauth Requests           : 2
  Max Frame Retries             : 2
```

The following example displays authentication configuration details for port 1/1/1.

```
device# show auth configuration ethernet 1/1/1
Port 1/1/1 Configuration:
  Auth Order                    : mac-auth dot1x
  Auth Mode                     : Multiple Untagged Mode
  Auth Failure Action           : Block traffic
  Auth Timeout Action           : Treat as a successful authentication
  DoS Protection                : Disabled (limit = 512)
  Source-guard Protection       : Disabled
  Aging                         : Enabled
  Max Sessions                  : 32
  Reauth-timeout                : 120 seconds
  802.1X Port-Control           : Auto
```

History

Release version	Command history
08.0.80	This command was introduced.

show authentication sessions

Displays details of 802.1X or MAC authentication sessions.

Syntax

show authentication sessions { **all** | **ethernet** { *unit* / *slot* / *port* } | **unit** *unit_number* }

show authentication sessions { **brief** }

show authentication sessions { detail { **ethernet** { *unit* / *slot* / *port* } | **unit** *unit_number* } }

Parameters

all

Displays information on all authentication sessions for the stack or standalone unit.

ethernet { *unit* / *slot* / *port* }

Displays authentication sessions for the specified interface or range of interfaces.

unit *unit_number*

Displays authentication sessions for the specified stack unit.

brief

Displays abbreviated information on authentication sessions.

detail

Displays detailed information on authentication sessions.

Modes

Privileged EXEC or any configuration mode

Examples

The following example displays information on all authentication sessions for the stack.

```
device# show authentication sessions all
-------------------------------------------------------------------------------------------------------
-----
Port    MAC             IP(v4/v6)           User    VLAN Auth    Auth    ACL   Session  Age  PAE
        Addr            Addr                Name         Method  State         Time          State
-------------------------------------------------------------------------------------------------------
-----
2/1/25  00aa.aaaa.0000  198.1.1.2           MVDI_1 130  MAUTH   permit Yes   210     Ena   N/A
2/1/25  00aa.aaaa.0001  fe80::2aa:aaff:feaa DVDI_1 130  8021.X  permit Yes   210     Ena   AUTHENTICATED
                        3000::2
                        3000::2
1/1/15 00bb.bbbb.0001   N/A                 DVDI_2 230  8021.X  permit None  500    Ena    AUTHENTICATED
1/1/10 0010.9400.1101   N/A                 MVDI_2 330  MAUTH   permit None  410    Ena    N/A
```

The following example displays information on authentication sessions for a specific interface.

```
device(config)# show authentication sessions ethernet 2/1/25
-------------------------------------------------------------------------------------------------------------
-----
Port    MAC             IP(v4/v6)           User   VLAN Auth    Auth   ACL   Session  Age  PAE
        Addr            Addr                Name        Method  State        Time          State
-------------------------------------------------------------------------------------------------------------
-----
2/1/25  00aa.aaaa.0000  198.1.1.2           MVDI_1 130  MAUTH   permit Yes   210     Ena   N/A
2/1/25  00aa.aaaa.0001  fe80::2aa:aaff:feaa DVDI_1 130  8021.X  permit Yes   210     Ena   AUTHENTICATED
```

The following example displays session information for stack unit 1.

```
device(config)# show authentication sessions unit 1
-------------------------------------------------------------------------------------------------------------
-----
Port    MAC             IP(v4/v6)           User   VLAN Auth    Auth   ACL   Session  Age  PAE
        Addr            Addr                Name        Method  State        Time          State
-------------------------------------------------------------------------------------------------------------
-----
1/1/15  00bb.bbbb.0001  N/A                 DVDI_2 230  8021.X  permit None  500     Ena   AUTHENTICATED
1/1/10  0010.9400.1101  N/A                 MVDI_2 330  MAUTH   permit None  410     Ena   N/A
```

The following example displays a brief description of authentication sessions.

```
device# show authentication sessions brief
-----------------------------------------------------------------------------------------
Port   Number of         Number of          Number of      Untagged            Dynamic
       Attempted Users   Authorized Users   Denied Users   VLAN Type           Port ACL
       MAC DOT1X         MAC DOT1X          MAC DOT1X
-----------------------------------------------------------------------------------------
1/1/7  0   1             0   1              0   0          RADIUS-VLAN         No
1/1/8  1   0             1   0              0   0          Auth-Default-VLAN   No
1/1/9  0   0             0   0              0   0          Multiple No
1/1/10 0   0             0   0              0   0          Auth-Default-VLAN   No
```

The following example displays a detailed description of authentication sessions on port 17/1/1.

```
device# show authentication sessions detail ethernet 17/1/1
Auth Session Info (Port 17/1/1, MAC a036.9f6e.1fd2) :
State                 : Permitted
Auth Method           : 802.1X              Auth Mode              : Single Untagged
VLAN Type             : Radius-VLAN         VLAN                   : 200
Voice VLAN            : 0                   PVID                   : 0
Tagged VLANs          :
User Name             : joe.user@arris.com
Session Time          : 1381                Reauth Time            : 2220
Idle Timeout          : 120                 Session Timeout        : 0
Acct session ID       : 2                   PCE Index              : 65535
PAE State             : AUTHENTICATED       Age                    : Disabled
Qos Priority          : 0                   Failure Reason         :
Auth Filter Applied   : No                  Tagged                 : No
VLAN Add Req State    : Complete            VLAN Del Req State     : Init
Filter Add Req State  : Complete            Filter Del Req State   : Init
Stale                 : No                  Delete Pending         : No
802.1X Enabled        : No                  Session Control        : Self
V4 ACL Applied        : No                  V6 ACL Applied         : No
V4 IN ACL (Session)   : acl1                V4 OUT ACL (Session)   : -
V6 IN ACL (Session)   : -                   V6 OUT ACL (Session)   : -
Client Voice Phone    : No                  Client Wireless AP     : No
802.1X Capable        : Yes
IP Addresses          : 10.176.167.145
V4-IN ACL (Dynamic)   : 3928                V4-OUT ACL (Dynamic)   : 0
V6-IN ACL (Dynamic)   : 0                   V6-OUT ACL (Dynamic)   : 0
V4-IN ACL RefCnt      : 1                   V4-OUT ACL RefCnt      : 0
V6-IN ACL RefCnt      : 0                   V6-OUT ACL RefCnt      : 0
V4 ACL Trap Rule      : Yes                 V6 ACL Trap Rule       : No
Addr Change Count     : 0                   MBV Usage Count        : 1
Radius VLAN RefCnt    : 1
Auth Order            : dot1x, mac-auth     Auth Fail Action       : Restricted VLAN (3)
Auth Timeout Action   : Failure             Aging : Enabled
SG Protection         : Disabled            DOS Protection         : Disabled (limit = 512)
Reauthentication      : Enabled             Reauth Period          : 3600
Reauth Timeout        : 300                 Max Ssessions          : 2
Port Control          : Auto                Quiet Period           : 60
Supplicant Time       : 30                  Tx Period              : 3
Max Reauth Requests   : 2 Max               Frame Retries          : 2
```

History

Release version	Command history
08.0.80	This command was introduced.

show authentication statistics

Displays authentication statistics for a specified interface.

Syntax

show authentication statistics { **all** | **ethernet** { *unit* / *slot* / *port* } | **unit** *unit_number* }

Parameters

all

Displays information on all authentication statistics for the stack or standalone unit.

ethernet *unit* / *slot* / *port*

Displays authentication statistics for the specified port.

unit *unit_number*

Displays authentication statistics for the specified stack unit.

Modes

All modes.

Command Output

The **show authentication statistics** command displays the following information:

Output field	Description
RX EAPOL Start	The number of EAPOL-Start frames received on the port
RX EAPOL Logoff	The number of EAPOL-Logoff frames received on the port
RX EAPOL Invalid	The number of invalid EAPOL frames received on the port
RX EAPOL Total	The total number of EAPOL frames received on the port
RX EAP Resp/Id	The number of EAP-Response/Identity frames received on the port
RX EAP Resp other than Resp/Id	The total number of EAPOL-Response frames received on the port that were not EAP-Response/ Identity frames
RX EAP Length Error	The number of EAPOL frames received on the port that have an invalid packet body length
Last EAPOL Version	The version number of the last EAPOL frame received on the port
Last EAPOL Source	The source MAC address in the last EAPOL frame received on the port
TX EAPOL Total	The total number of EAPOL frames transmitted on the port
TX EAP Req/Id	The number of EAP-Request/Identity frames transmitted on the port
TX EAP Req other than Req/Id	The number of EAP-Request frames transmitted on the port that were not EAP-Request/Identity frames
Accepted Sessions	The number of MAC authentication sessions accepted
Rejected Sessions	The number of MAC authentication sessions rejected
In Progress Sessions	The number of MAC authentication sessions in progress
Attempted Sessions	The number of MAC authentication sessions attempted
Number of Errors	The number of errors encountered while processing sessions

Examples

The following example displays authentication statistics for port 1/1/1.

```
device# show authentication statistics ethernet 1/1/1
Port 1/1/1 Statistics:
  802.1X:
    RX EAPOL Start:                 0
    RX EAPOL Logoff:                0
    RX EAPOL Invalid:               0
    RX EAPOL Total:                 0
    RX EAP Resp/Id:                 0
    RX EAP Resp other than Resp/Id: 0
    RX EAP Length Error:            0
    Last EAPOL Version:             0
    Last EAPOL Source:              0000.0050.0B83
    TX EAPOL Total:                 217
    TX EAP Req/Id:                  163
    TX EAP Req other than Req/Id:   0
  MAC-Auth:
    Accepted Sessions:              0
    Rejected Sessions:              0
    Inprogress Sessions:            0
    Attempted Sessions:             0
    Number of Errors:               0
```

History

Release version	Command history
08.0.80	This command was introduced.

show bfd

Displays Bidirectional Forwarding Detection (BFD) information.

Syntax

show bfd

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Command Output

The **show bfd** command displays the following information:

Output Field	Description
BFD State	Specifies whether BFD is enabled or disabled on the device.
Version	Specifies the version of the BFD protocol operating on the device
Sessions	The number of BFD sessions currently in operation on the device.
Total count	The number of BFD sessions currently in operation on the device.
Max Allowed	The maximum number of BFD sessions that can be configured on the device.
Maximum Reach Count	The number of times the request to set up a BFD session was declined because the maximum number of BFD sessions allowed on the device would have been exceeded.
Micro Sessions	The number of micro-BFD sessions currently in operation on the device.
Micro-BFD	
oper-state	Micro-BFD operational state.
config-state	Micro-BFD configuration state
Protocols Registration Count	Specifies the protocols that are registered for the BFD session.
Number of Interfaces with controller configuration	The number of interfaces with controller configuration.
Nhop-Intf	The nexthop interface.
Sessions-count	The number of BFD sessions configured for the interface.
M-BFD[Lag per-link]	Micro-BFD configuration on the interface.

Examples

The following example shows sample output from the **show bfd** command.

```
device> show bfd

 BFD State: ENABLE    Version: 1
 Sessions      : Total count: 2    Max Allowed: 256    Max Reach Count: 0
 Micro Sessions: Total count: 0    Max Allowed: 0    Max Reach Count: 0
 Micro-bfd: oper-state:  disabled,  config-state:  disabled
 Protocols Registration Count: 5
     bgp/default-vrf  ospf/white  static/default-vrf  static/white  ospf/default-vrf

 Number of Interfaces with controller configuration: 2
    Nhop-Intf   Sessions-count  M-BFD[Lag per-link]
    ---------   --------------  --------------------
    1/1/13      1               no
    1/1/14      1               no
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd agent

Displays Bidirectional Forwarding Detection (BFD) agent-related information.

Syntax

show bfd agent info

show bfd agent sessions{**ipv4**|**ipv6**|**statistics**}{*session-id*|**all**}[**detail**][*stack-id*]

Parameters

info
Specifies all BFD agent-related information.

sessions
Specifies session information for an agent.

ipv4
Specifies IPv4 session information.

ipv6
Specifies IPv6 session information.

statistics
Specifies session statistics.

session-id
Specifies a BFD session.

all
Specifies all BFD sessions.

detail
Specifies detailed information information.

stack-id
Specifies a stack unit.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows agent-related information for all IPv4 sessions.

```
device> show bfd agent sessions ipv4 all

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD
MinTx/MinRx/Mult [milliseconds]  HoldTime [seconds]

Id  Neighbor          Local             NHopIntf    Phy-Port Lag-Port MinRx|MinTx|Mult  P/H/M    vrf
--  --------          -----             --------    -------- -------- ----------------- ----- ---------
1   20.20.20.1        10.10.10.1        1/1/13      1/1/13   INVALID  300   300   3     N/M/N default-vrf
2   40.40.40.1        30.30.30.1        1/1/14      1/1/14   INVALID  300   300   3     N/M/N white
```

The following example shows agent-related information for all sessions.

```
device> show bfd agent info

Agent id - 1
  HW Assist       : 1       MicroBFD       : 0           Max Session    : 256
  HA Epoch        : 0
  HA in Prog      : No      HA Start time  : 0:0:0       HA End time    : in future
  UC Session      : 2       AG Session     : 2
  Tx-id           : 6       Rx-Id          : 2
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd applications

Displays information about the applications that are registered to Bidirectional Forwarding Detection (BFD).

Syntax

show bfd applications[**counters**]

Parameters

counters

Specifies the counters per application.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows sample output from the **show bfd applications** command.

```
device> show bfd applications

  show bfd applications
  Protocols Registration Count for VRF [default]: 3
    Protocol    Parameter Global-Holdtime HA State
    bgp         1         0               none
    static      0         0               none
    ospf        1         0               none
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd counters

Displays Bidirectional Forwarding Detection (BFD) counters.

Syntax

show bfd counters

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows sample output from the **show bfd counters** command.

```
device> show bfd counters

Session exceeded error    : 0       mbfd Session exceeded errro    : 0
APP exceeded error        : 0       No memory error                : 0
No session id error       : 0       No mbfd session id error:      : 0
Send ITC to ND error      : 0       Send ITC to APP error          : 0
Send IPC to AG error      : 0       Send ITC to AG error           : 0
Send IPC full error       : 0       Send ITC full error            : 0
Rx Unkonw Msg Error       : 0       Send ITC to APP                : 2
Session Timer Stat        : 0/2/2
BFD Task Msg Queue Details
BFD Task ITC Queue (Priority:Low) current length: 0, size: 1000000
BFD Task ITC Queue (Priority:High) current length: 0, size: 1000000
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd ha info

Displays high availability (HA) information from active agents for Bidirectional Forwarding Detection (BFD).

Syntax

show bfd ha info[**all**]

Parameters

all

Specifies all agents.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows sample output from the **show bfd ha info** command.

```
device> show bfd ha info
SO in Prog: No    SO-Completed from 0 agents
SO Epoch: 0
Agent Id - 1 (STANDALONE)
  Agent State         : so not prog       HA Recon state      : NONE
  tx id               : 2                 Agent IPC State     : Lost
  rx id               : 5
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd micro-session

Displays information about micro Bidirectional Forwarding Detection (micro-BFD) sessions.

Syntax

show bfd micro-session*session-id*

Parameters

session-id

Specifies a micro-BFD session.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows information about a specified micro-BFD session.

```
device> show bfd micro-session 1

Neighbor: 2.2.2.2
Local   : 2.2.2.1
Outgoing Lag: lg9 MBfd Sessions: 1
     M-Id State  R-State  LagPort  NegRx|NegTx|DTime   R
     ---- -----  -------  -------  ------------------ -
     158  UP     UP       1/1/10   300   300   900     Y
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd neighbors

Displays Bidirectional Forwarding Detection (BFD) neighbor information.

Syntax

show bfd neighbors[*ip-address*]

show bfd neighbors bgp[**details**][*ip-address*|*ipv6-address*]

show bfd neighbors details[*ip-address*|*ipv6-address*]

show bfd neighbors ospf[**details**][*ip-address*|*ipv6-address*]

Parameters

ip-address
: Specifies an IP address.

bgp
: Specifies BFD neighbor session information for BGP.

details
: Specifies detailed information.

ipv6-address
: Specifies an IPv6 address.

ospf
: Specifies BFD neighbor session information for OSPF.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Command Output

The **show bfd neighbors** command displays the following information:

Output Field	Description
NeighborAddress	The IPv4 or IPv6 address of the remote peer.
State	The current state of the BFD session: • A.DOWN - The administrative down state. • DOWN - Down state. • INIT - The initialization state. • UP- Up state. • UNKNOWN - The current state is unknown.

Output Field	Description
Interface	Specifies the interface on which the BFD session is running.
Holddown(ms)	The interval, in milliseconds, after which the session transitions to the down state if no message is received.
Interval(ms)	The interval, in milliseconds, at which the local device sends BFD messages to the remote peer.
R/H	R - Heard from Remote. Displays Y for Yes or N for No. H - Hops. Display S for single hop or M for multihop.

The **show bfd neighbors details** command displays the following information:

Output Field	Description
NeighborAddress	The IPv4 or IPv6 address of the remote peer.
State	The current state of the BFD session: • UP- Up state. • DOWN - Down state. • A.DOWN - The administrative down state. • INIT - The initialization state. • UNKNOWN - The current state is unknown.
Interface	Specifies the interface on which the BFD session is running.
Holddown(ms)	The interval, in milliseconds, after which the session transitions to the down state if no message is received.
Interval(ms)	The interval, in milliseconds, at which the local device sends BFD messages to the remote peer.
R/H	R - Heard from Remote. Displays Y for Yes or N for No. H - Hops. Display S for single hop or M for multihop.
Registered Protocols(Protocol/VRFID):	Specifies which protocols are registered to use BFD on the port.
Local	The local device.
Disc	The value of the local discriminator field in the BFD control message in the last message sent.
Diag	Value of the diagnostic field in the BFD control message in the last message sent.
Demand	Value of the demand bit in the BFD control message in the last message sent.
Poll	Value of the poll bit in the BFD control message in the last message sent.
Port	The port that BFD is enabled on.
MinTxInterval(ms)	The interval, in milliseconds, during which the device will send a BFD message from the neighbor port to the peer.
MinRxInterval(ms)	The interval, in milliseconds, that the neighbor device waits to receive a BFD message from the peer.
Multiplier	The number of consecutive BFD control packets that must be missed from a BFD peer before the connection to that peer is considered down.
Remote	Remote peer.
Negotiated	Negotiated time intervals.
Neg Tx	Negotiated TX interval.
Neg Rx	Negotiated RX interval.
Stats:	BFD session statistics.

Output Field	Description
RX:	Total number of BFD control messages received from the remote peer.
TX:	Total number of BFD control messages sent to the remote peer.
SessionUpCount	The number of times the session has transitioned to the UP state.
SysUpTime	The amount of time that the system has been up.
Session Uptime	The amount of time the BFD session has been in the UP state.
LastSessionDownTimestamp	The system time at which the session last transitioned from the UP state to any other state.

Examples

The following example shows sample output from the **show bfd neighbors** command.

```
device> show bfd neighbors

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors in VRF [default]: 1 A-DOWN:0 DOWN:0 INIT:0 UP:1

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   20.20.20.1        10.10.10.1        UP     1/1/13     300   300   900      N/M/N/Y
```

The following example shows sample output from the **show bfd neighbors** command when an IP address is specified.

```
device> show bfd neighbors 20.20.20.1

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   20.20.20.1        10.10.10.1        UP     1/1/13     300   300   900      N/M/N/Y
```

The following example shows sample output from the **show bfd neighbors bgp** command.

```
device> show bfd neighbors bgp

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors: 1  Application:bgp  VRF [default] A-DOWN:0 DOWN:0 INIT:0 UP:1

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   2.2.2.2           2.2.2.1           UP     v2         NA    NA    NA       N/S/Y/Y
```

The following example shows sample output from the **show bfd neighbors bgp** command when an IP address is specified.

```
device> show bfd neighbors bgp 2.2.2.2

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   2.2.2.2           2.2.2.1           UP     v2         NA    NA    NA       N/S/Y/Y
  Number of Applications[Protocol] in vrf default-vrf:    2
      ospf: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
       bgp: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
  SysUpT: 0d:0h:13m:30s.285ms   Sess-UpT: 0d:0h:3m:5s.227ms   Sess-dTS: 0d:0h:7m:52s.558ms
  Outgoing Lag: lg9  Lag Port: NA  Prev State: INIT
  MBfd Sessions: 1
     M-Id State  R-State  LagPort  NegRx|NegTx|DTime   R
     ---- -----  -------  -------  ------------------ -
     158  UP     UP       1/1/10   300   300   900     Y
```

The following example shows sample output from the **show bfd neighbors bgp** command when the **details** keyword is used.

```
device> show bfd neighbors bgp details

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors: 1  Application:bgp  VRF [default] A-DOWN:0 DOWN:0 INIT:0 UP:1

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   2.2.2.2           2.2.2.1           UP     v2         NA    NA    NA       N/S/Y/Y
  Number of Applications[Protocol] in vrf default-vrf:    2
      ospf: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
       bgp: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
  SysUpT: 0d:0h:13m:30s.317ms   Sess-UpT: 0d:0h:3m:5s.227ms   Sess-dTS: 0d:0h:7m:52s.558ms
  Outgoing Lag: lg9  Lag Port: NA  Prev State: INIT
  MBfd Sessions: 1
     M-Id State  R-State  LagPort  NegRx|NegTx|DTime   R
     ---- -----  -------  -------  ------------------ -
     158  UP     UP       1/1/10   300   300   900     Y
```

The following example shows sample output from the **show bfd neighbors details** command.

```
device> show bfd neighbors details

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors in VRF [default]: 1 A-DOWN:0 DOWN:0 INIT:0 UP:1

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   20.20.20.1        10.10.10.1        UP     1/1/13     300   300   900      N/M/N/Y
  Number of Applications[Protocol] in vrf default-vrf:    1
    static: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
  Local : Epid: 1  dem: 0  poll: 0  diag:  No diag
                MinTx: 300    MinRx: 300    Multiplier: 3
  Remote Epid: 1  dem: 0  poll: 0  diag:  No diag
                MinTx: 300    MinRx: 300    Multiplier: 3
  Last Event: Local up   Remote State: UP   Status: No Error
  Prev State: INIT
  SysUpT: 0d:0h:34m:11s.638ms   Sess-UpT: 0d:0h:31m:48s.847ms   Sess-dTS: 0d:0h:0m:0s.0ms
  UDP: Target port: 4784  Source port: 49152
  Session in LP: Yes   Nhop/Arp change: No  Nhop IP: 10.10.10.2
  Arp: Yes  Out Port: 1/1/13  Vlan: 1  Mac: cc4e.24f7.2440
```

The following example shows sample output from the **show bfd neighbors details** command when an IP address is specified.

```
device> show bfd neighbors details 20.20.20.1

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   20.20.20.1        10.10.10.1        UP     1/1/13     300   300   900      N/M/N/Y
  Number of Applications[Protocol] in vrf default-vrf:    1
    static: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
  Local : Epid: 1  dem: 0  poll: 0  diag:  No diag
               MinTx: 300    MinRx: 300    Multiplier: 3
  Remote Epid: 1  dem: 0  poll: 0  diag:  No diag
               MinTx: 300    MinRx: 300    Multiplier: 3
  Last Event: Local up   Remote State: UP   Status: No Error
  Prev State: INIT
  SysUpT: 0d:0h:35m:11s.318ms   Sess-UpT: 0d:0h:32m:48s.847ms   Sess-dTS: 0d:0h:0m:0s.0ms
  UDP: Target port: 4784  Source port: 49152
  Session in LP: Yes   Nhop/Arp change: No  Nhop IP: 10.10.10.2
  Arp: Yes  Out Port: 1/1/13  Vlan: 1  Mac: cc4e.24f7.2440
```

The following example shows sample output from the **show bfd neighbors ospf** command.

```
device> show bfd neighbors ospf

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors: 1  Application:ospf  VRF [default] A-DOWN:0 DOWN:0 INIT:0 UP:1

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   2.2.2.2           2.2.2.1           UP     v2         NA    NA    NA       N/S/Y/Y
```

The following example shows sample output from the **show bfd neighbors ospf** command when an IP address is specified.

```
device> show bfd neighbors ospf 2.2.2.2

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R
--  --------          -----             -----  --------   -----------------    -------
1   2.2.2.2           2.2.2.1           UP     v2         NA    NA    NA       N/S/Y/Y
  Number of Applications[Protocol] in vrf default-vrf:    2
      ospf: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
       bgp: MinTx: 300    MinRx: 300    Multiplier: 3   Holdtime: 0
  SysUpT: 0d:0h:13m:30s.463ms   Sess-UpT: 0d:0h:3m:5s.227ms   Sess-dTS: 0d:0h:7m:52s.558ms
  Outgoing Lag: lg9  Lag Port: NA  Prev State: INIT
  MBfd Sessions: 1
     M-Id State  R-State  LagPort  NegRx|NegTx|DTime   R
     ---- -----  -------  -------  ------------------ -
     158  UP     UP       1/1/10   300   300   900     Y
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd sessions

Displays information about Bidirectional Forwarding Detection (BFD) sessions.

Syntax

show bfd sessions*session-id*[**hw**]

show bfd sessionsinterfaceethernet*unit/slot/port*[**details**][*ip-address*|*ipv6-address*]

show bfd sessionsinterfaceve*vlan_id*[**details**][*ip-address*|*ipv6-address*]

show bfd sessionsipv4all

show bfd sessionsipv6all

Parameters

session-id
Specifies a BFD session.

hw
Specifies the session information from the micro-controller.

interface
Specifies BFD sessions for an interface.

ethernet*unit/slot/port*
Specifies an Ethernet interface.

details
Specifies detailed information.

ip-address
Specifies an IP address.

ipv6-address
Specifies an IPv6 address.

ve*vlan_id*
Specifies the VLAN number.

ipv4all
Specifies all IPv4 sessions.

ipv6all
Specifies all IPv6 sessions.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows information about all IPv4 BFD sessions.

```
device> show bfd sessions ipv4 all

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors in VRF [All]: 2 A-DOWN:0 DOWN:0 INIT:0 UP:2

Id  Neighbor          Local             State  NHopIntf   NegRx|NegTx|DTime    P/H/M/R    vrf
--  --------          -----             -----  --------   -----------------    ------- ---------
1   20.20.20.1        10.10.10.1        UP     1/1/13     300   300   900      N/M/N/Y default-vrf
2   40.40.40.1        30.30.30.1        UP     1/1/14     300   300   900      N/M/N/Y white
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd trace session

Displays Bidirectional Forwarding Detection (BFD) information session traces.

Syntax

show bfd trace session[*session-id*]

Parameters

session-id

Specifies a BFD session.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows information about BFD session traces for a specified session.

```
device> show bfd trace session 3

arpResolved:                1   session in lp:                  0
check_for_nhop_arp_change   0   arp_chg_last_time:           425h:16m:12s.972ms

Session trace: num wrap = 0
1     17d 17:16:12 - Application 13/0 added - count 1
2     17d 17:21:32 - State change app 13 state DOWN - event - Local init
3     17d 17:30:41 - State change app 13 state UP - event - Local up
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd uc sessions

Displays Bidirectional Forwarding Detection (BFD) session information for the micro controller.

Syntax

show bfd uc sessions { **ipv4** | **ipv6** } { **all** | *session-id* } [*stack-id*]

show bfd uc sessions statistics drops *stack-id*

Parameters

ipv4
Specifies IPv4 sessions.

ipv6
Specifies IPv6 sessions.

all
Specifies all sessions.

session-id
Specifies a session.

stack-id
Specifies a stack.

statistics
Specifies BFD session statistics.

drops
Specifies statistics for session drops.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows all IPv4 BFD session information for the micro controller.

```
device> show bfd uc sessions ipv4 all

Flags:  H: Hop  [S:Single/M:Multi]  SH/MH: Single-hop/Multi-hop
        E: Echo [Y:Yes/N:No]            D: dem-mode [Y:Yes/N:No]
        P: Passive-Mode [Y:Yes/N:No]   V6: Session is V6
        Ad-Tx-Rem:  Tx adm-down to remote on session removal
        M-Bfd    :  Micro Bfd SH sessions [Will be Yes for LAG ports]
Intervals: All time intervals shown in msecs,  Multiplier shown in units

Id  Neighbor          Local             Phy-Port   L-State  R-State  M-Bfd  P/H/E
--  --------          -----             --------   -------  -------  -----  -----
1   20.20.20.1        10.10.10.1        1/1/13     UP       UP       No     N/M/N
2   40.40.40.1        30.30.30.1        1/1/14     UP       UP       No     N/M/N
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd v6-neighbors

Displays IPv6 information for Bidirectional Forwarding Detection (BFD) information sessions.

Syntax

show bfd v6-neighbors[*ipv6-address*|**bgp**[[**details**]*ip-address*|*ipv6-address*] |**details**[*ip-address*|*ipv6-address*] |**ospf6**[**details**][*ip-address*|*ipv6-address*]]

Parameters

ipv6-address

Specifies an IPv6 address.

bgp

Specifies BGP information.

details

Specifies detailed information.

ip-address

Specifies an IP address.

ospf6

Specifies OSPFv3 information.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows sample output from the **show bfd v6-neighbors** command.

```
device> show bfd v6-neighbors

Flags: H:Hop [S:Single/M:Multi] P:Passive-Mode M:Micro-BFD R:RxRemote [Y:Yes/N:No]
MinTx/MinRx/NegTx/NegRx/DTime [milliseconds]  HoldTime [seconds]
Total Neighbors in VRF [default]: 1 A-DOWN:0 DOWN:0 INIT:0 UP:1

Id  Neighbor                                Local                                   State  NHopIntf
NegRx|NegTx|DTime   P/H/M/R
--  --------                                -----                                   -----  --------
-----------------   -------
2   fe80::629c:9fff:fe20:8380               fe80::768e:f8ff:fef9:6d80               UP     v2
NA    NA    NA      N/S/Y/Y
```

History

Release version	Command history
08.0.90	This command was introduced.

show bfd vrf

Displays Bidirectional Forwarding Detection (BFD) information for specified VRF instances.

Syntax

show bfd vrf *vrf-name***applications**[**counters**]

show bfd vrf *vrf-name***neighbors**[*ip-address*|**bgp**[**details**][*ip-address*|*ipv6-address*] |**details**[*ip-address*|*ipv6-address*] |**ospf**[**details**][*ip-address*|*ipv6-address*]]

show bfd vrf *vrf-name***v6-neighbors**[*ipv6-address*|**bgp**[**details**][*ip-address*|*ipv6-address*] |**details**[*ip-address*|*ipv6-address*] |**ospf6**[**details**][*ip-address*|*ipv6-address*]]

Parameters

vrf-name
Specifies a VRF instance.

applications
Specifies the applications that are registered to BFD.

counters
Specifies the counters per application.

neighbors
Specifies IPv4 neighbor session information.

ip-address
Specifies an IP address.

bgp
Specifies BGP.

details
Specifies detailed information.

ipv6-address
Specifies an IPv6 address.

ospf
Specifies OSPFv2.

v6-neighbors
Specifies IPv6 neighbor session information.

ospf6
Specifies OSPFv3.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 devices only.

Examples

The following example shows information about the applications that are registered to BFD for a non-default VRF instance.

```
device> show bfd vrf white applications

  Protocols Registration Count for VRF [white]: 2
    Protocol   Parameter Global-Holdtime HA State
    ospf       1         0               none
    static     0         0               none
```

History

Release version	Command history
08.0.90	This command was introduced.

show boot-monitor

This CLI displays the current and the recommended boot-monitor version, allowing you to understand the mismatch.

Syntax

show boot-monitor

Modes

Privileged EXEC mode

Usage Guidelines

Whenever current boot-version is not same as the recommended boot-monitor version, show version command displays alert message for you to indicate the mismatch in boot-monitor version and prompts you to run the **show boot-monitor** command.

Examples

The following is an example of the output displayed from the **show boot-monitor** command.

```
device#show boot-monitor
UNIT1:
Current Version: 10.1.11b006
Recommended Version: 10.1.11b014(Mismatch)
UNIT2:
Current Version: 10.1.11b014
Recommended Version: 10.1.11b014
UNIT3:
Current Version: 10.1.11b014
Recommended Version: 10.1.11b014
UNIT4:
Current Version: 10.1.11b006
Recommended Version: 10.1.11b014 (Mismatch)
```

show boot-preference

Displays the boot sequence in the startup configuration and running configuration files.

Syntax

show boot-preference

Modes

User EXEC mode

Global configuration mode

All configuration modes

Usage Guidelines

The displayed boot sequence is also identified as user-configured or the default.

Examples

The following example shows the default boot sequence preference.

```
device# show boot-preference

Boot system preference (Configured):
            Use Default
Boot system preference(Default):
            Boot system flash primary
            Boot system flash secondary
```

The following example shows a user-configured boot sequence preference.

```
device# show boot-preference

Boot system preference(Configured):
            Boot system flash primary
Boot system preference(Default):
            Boot system flash primary
            Boot system flash secondary
```

show cable-diagnostics tdr

Displays the results of Virtual Cable Test (VCT) TDR cable diagnostic testing.

Syntax

show cable-diagnostics tdr*stackid/slot/port*

Parameters

stackid/slot/port

Identifies the specific interface (port), by device, slot, and port number in the format shown.

Modes

User EXEC mode

Usage Guidelines

Most RUCKUS ICX devices support VCT technology. VCT technology enables the diagnosis of a conductor (wire or cable) by sending a pulsed signal into the conductor, then examining the reflection of that pulse. This method of cable analysis is referred to as Time Domain Reflectometry (TDR). By examining the reflection, the device can detect and report cable statistics such as local and remote link pair, and link status.

Examples

The following example displays TDR test results for port 1, slot 2 on device 3 in the stack. The results indicate that the port is down or the cable is not connected.

```
device>show cable-diagnostics tdr 3/2/1

Port      Speed Local pair  Remote pair Pair status
--------- ----- ---------- ----------- -----------
01        UNKWN Pair A                    Open
                Pair B                    Open
                Pair C                    Open
                Pair D                    Open
```

The following example displays I the TDR test results for the same port show details for an active port.

```
device>show cable-diagnostics tdr 3/2/1

Port      Speed Local pair  Remote pair Pair status
--------- ----- ---------- ----------- ----------- -----------
01        1000M Pair A       Pair B      Terminated
                Pair B       Pair A      Terminated
                Pair C       Pair D      Terminated
                Pair D       Pair C      Terminated
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.95e	The output of this command was modified to remove the "pair length" option.

show cable-signal-error-count

Displays the cable signal error count for all 2.5G ports.

Syntax

show cable-signal-error-count

Modes

User EXEC mode

Usage Guidelines

Cable signal error scanning support is supported for 2.5G ports only.

Examples

The following example displays output for the **show-cable-signal-error-count** command where 2.5G ports are from 1/1/1 to 1/1/16.

```
device# show cable-signal-err-cnt
Port              Cable Signal Error Count
1/1/1                    0
1/1/2                    0
1/1/3                    2
:
:
1/1/16                   0
```

History

Release version	Command history
08.0.95h	This command was introduced.

show captive-portal

Displays the details of the Captive Portal profile configured on the device.

Syntax

show captive-portal *profile-name*

Parameters

profile-name

Specifies a specific Captive Portal profile configured on the device.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Web Authentication configuration mode

Command Output

The **show captive-portal** command displays the following information:

Output field	Description
cp-name	The local account username.
virtual-ip	Captive portal server name or ip address.
virtual-port	The port number to facilitate HTTP services for the client. The port can be secure HTTPS port 443 or unsecure HTTP port 80.
login-page	The login-page hosted on the external web server.

Examples

The following example displays the details for the cp-ruckus Captive Portal profile. The external web server used in this case is a Ruckus Cloudpath.

```
device(config)# show captive-portal cp-ruckus
Configured Captive Portal Profile Details :
  cp-name               :cp-ruckus
  virtual-ip            :10.21.240.50
  virtual-port          :80
  login-page            :/enroll/ruckus/guestlogin.php
```

The following example displays the details for the cp-ruckus Captive Portal profile. The external web server used in this case is an Aruba Clearpass.

```
device(config)# show captive-portal cp-ruckus
Configured Captive Portal Profile Details :
  cp-name               :cp-ruckus
  virtual-ip            :10.21.240.42
  virtual-port          :80
  login-page            :/guest/ruckus/guestlogin.php
```

The following example displays the details for the cp-ruckus Captive Portal profile. The external web server used in this case is a Cisco ISE.

```
device(config)# show captive-portal cp-ruckus
Configured Captive Portal Profile Details :
  cp-name               :cp-ruckus
  virtual-ip            :10.21.240.48
  virtual-port          :80
  login-page            :ruckusguestlogin
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 8.0.30j.

show chassis

Displays chassis information.

Syntax

show chassis

Command Output

The **show chassis** command output displays the following information.

Output field	Description
Power supply #	The presence, status, output type, model number, serial number, and firmware version number of the power supply units, if present.
Power supply # Fan Air Flow Direction	The air flow direction of the power supply unit.
Fan #	The presence, status, speed mode, and air flow direction of the fan. The fan controlled temperature and temperature thresholds.
MAC # Temperature Readings	The current temperature reading of the MAC device.
CPU Temperature Readings	The current temperature reading of the CPU.
sensor # Temperature Readings	The current temperature reading of the sensor.
Boot Prom MAC	The MAC address of the boot prom.
Management MAC	The management MAC address, for the active controller only.

Modes

Privileged EXEC mode

Examples

The following is sample output from the **show chassis** command executed on an ICX 8200 device.

```
ICX8200-48PF2 Router# show chassis

The stack unit 1 chassis info:

Power supply 1 (AC - PoE) present, status ok
        Model Number:   23-1000100-01
        Vendor Serial Number:   SA01A7372125000087
        Firmware Ver:   32.65
Power supply 2 present, status failed, reason NO POWER INPUT

Fan 1 ok, speed (auto): [[1]]<->2
Fan 2 ok, speed (auto): [[1]]<->2

Fan controlled temperature: 35.5 deg-C

Fan speed switching temperature thresholds:
                Speed 1: NM<----->56       deg-C
                Speed 2:       48<-----> 69 deg-C (shutdown)

Fan 1 Air Flow Direction:  Front to Back
Fan 2 Air Flow Direction:  Front to Back
Slot 1 Current Temperature: 25.0 deg-C (Sensor 1), 30.0 deg-C (Sensor 2), 35.5 deg-C (Sensor 3), 37.0
deg-C (Sensor 4), 33.0 deg-C (Sensor 5)
        Warning level.......: 55.0 deg-C
        Shutdown level......: 69.0 deg-C
Boot Prom MAC : c0c5.207e.9cd2
Management MAC: c0c5.207e.9cd2
```

History

Release	Command History
08.0.00a	This command was enhanced to display model number, serial number, and firmware version number for power supply units.
08.0.60	The command output was enhanced to display the status of the fan as fanless mode if the mode is enabled.
08.0.80	The command output was enhanced to display the temperature of the air outlet near the PSU.

show cli-command-history

Displays the history list of CLI commands executed on the device from any console, Telnet, or SSH session.

Syntax

show cli-command-history [**wide**]

Parameters

wide

Displays the complete form of the command names that are truncated in the output.

Modes

User EXEC mode

Global configuration

Command Output

The **show cli-command-history** command displays the following information:

Output field	Description
Session	The session type from which the command was executed.
User-name	The local account username.
Ip-address	The IP address of the device.
Executed-time	The time at which the command was executed.
Command	The command that was executed.

Examples

The following example shows the history list of commands executed on the device.

```
device# show cli-command-history

Slno Session  User-name            Ip-address   Executed-time   Command
   1 console  Un-authenticated user             Jun  2 10:15:54 no crypto-ssl certificate zero*
   2 console  Un-authenticated user             Jun  2 10:15:42 show files
   3 console  Un-authenticated user             Jun  2 10:15:39 show web
   4 console  Un-authenticated user             Jun  2 10:15:36 no web-management http
   5 console  Un-authenticated user             Jun  2 10:15:20 show web
   6 console  Un-authenticated user             Jun  2 10:14:53 write memory
  36 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show ip
  37 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show dir
  38 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show users
  39 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show files
  40 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show version
  41 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show ip ssh
  42 telnet_5 Ruckus             10.70.43.98 Jun  2 09:46:06 show ip address
```

The following example shows the complete form of the commands executed on the device.

```
device(config)# show cli-command-history wide

Slno Session User-name            Ip-address   Executed-time   Command
   1 console Un-authenticated user             Jun  2 10:15:54 no crypto-ssl certificate zeroize
   2 console Un-authenticated user             Jun  2 10:15:42 show files
   3 console Un-authenticated user             Jun  2 10:15:39 show web
   4 console Un-authenticated user             Jun  2 10:15:36 no web-management http
   5 console Un-authenticated user             Jun  2 10:15:20 show web
   6 console Un-authenticated user             Jun  2 10:14:53 write memory
  36 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show ip
  37 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show dir
  38 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show users
  39 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show files
  40 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show version
  41 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show ip ssh
  42 telnet_5 Ruckus              10.70.43.98 Jun  2 09:46:06 show ip address
```

History

Release version	Command history
08.0.40	This command was introduced.

show clock

Displays the local time, date, and time zone.

Syntax

show clock [**detail**]

Parameters

detail

Displays detailed information for the system clock inlcuding the summer-time settings.

Modes

Privileged EXEC mode

Usage Guidelines

To set the local system clock you can configure the date and time using the **clock set** command. Use the **clock timezone** command to set the timezone. If the daylight savings time is different from the default timezone setting, use the optional **clock summer-time** command to set the time and date for the start and end of the daylight savings period.

Examples

In the following example, the local system clock time, timezone, date, and time source are displayed.

```
device# show clock

03:35:53.658 Mountain Wed Aug 03 2016
Time source is Set Clock
```

In the following example, the local system clock time, timezone, date, time source, and summer time start and end dates and times are displayed.

```
device# show clock detail

03:35:53.658 Mountain Wed Aug 03 2016
Time source is Set Clock
Summer time starts 02:00:00 Mountain Sun Feb 28 2016 offset 30 mins
Summer time ends 02:00:00 Mountain Sun Oct 30 2016 offset 30 mins
```

History

Release version	Command history
08.0.50	This command was modified to display additional subsets of time zones specific to Australia and Europe and to display the optional offset value.

show cluster

Displays information about MCT clusters.

Syntax

show cluster [*cluster-id* | *cluster-name*]

show cluster { *cluster-id* | *cluster-name* } [**client-auto-detect**] [**config**]

show cluster { *cluster-id* | *cluster-name* } [**802-1w** | **span**] [**detail**] [*vlan-id*]

show cluster { *cluster-id* | *cluster-name* } **ccp** [**buffered_messages** | **client** [*client-name* | *client-rbridgeid*] | **peer** [*ip-address*] [**detail**]

show cluster { *cluster-id* | *cluster-name* } **client** [*client-name* | *client-rbridgeid*]

show cluster { *cluster-id* | *cluster-name* } **peer** [*ip-address*] [**detail**]

Parameters

cluster-id
: Displays cluster information for the specified cluster ID number.

cluster-name
: Specifies cluster information for the specified cluster name.

client-auto-detect
: Displays cluster information for auto-detected clients.

config
: Displays the CLI configuration for the cluster.

802-1w
: Displays cluster Rapid Spanning Tree Protocol (RSTP) status.

span
: Displays cluster Spanning Tree Protocol (STP) status.

detail
: Displays the detailed RSTP, STP, or peer information.

vlan-id
: Displays cluster information for the specified VLAN ID number.

ccp
: Displays the number of CCP messages.

buffered-messages
: Displays the number of buffered messages.

client
: Displays the information for the client identified either by the client ID or client name.

client-name
: Specifies the cluster client name.

client-rbridgeid
: Specifies the client RBridge ID.

peer *ip-address*

Displays the information for the cluster peer identified by the IP address. If only one peer exists the IP address is optional.

Modes

User EXEC mode

Usage Guidelines

Use this command without any options to display general cluster information.

Examples

The following example displays sample output of the **show cluster** command for cluster MgM 3000.

```
device# show cluster MgM 3000

Cluster MgM 3000
=============
Rbridge Id: 3, Session Vlan: 3000, Keep-Alive Vlan: 3001
Cluster State: Deploy
Client Isolation Mode: Loose
Member Vlan Range:
MCT Peer's Reachability using Keep-Alive Vlan: Peer Unreachable

 ICL Info:
 ---------
 Name            Port       Trunk
 MgM-MCT         lg1        1

 Peer Info:
 ----------
 Peer IP: 1.1.1.2, Peer Rbridge Id: 2, ICL: MgM-MCT
 KeepAlive Interval: 10 , Hold Time: 90, Fast Failover
 Active Vlan Range:
 Last Reason for CCP Down: Image version doesn't match with peer

 Peer State: CCP Down (CCP is Down)
 Reason for CCP Down: Image version doesn't match with peer

 Sequence Number Sent: 274
 Sequence Number Received: 0
 Number of Out-Of-Sequence Packets Received: 0

 Client Info:
 ------------
 Number of Clients configured: 1
 Name                     Rbridge-id Config      Port       Trunk FSM-State
 ttt                      30         Undeployed    -     -
```

The following example displays sample output of the **show cluster config** command for cluster SXR122.

```
device# show cluster SXR122 config

cluster SXR122 100
rbridge-id 100
session-vlan 1
keep-alive-vlan 3
icl SXR122-MCT ethernet 1/1/1
peer 172.17.0.2 rbridge-id 101 icl SXR122-MCT
deploy
client KL134
rbridge-id 14
client-interface ethernet 1/1/23
deploy
client AGG131
rbridge-id 10
client-interface ethernet 1/2/2
deploy
client FOX135
rbridge-id 15
client-interface ethernet 1/2/5
deploy
```

The following example displays sample output of the **show cluster client** command.

```
device# show cluster 1 client

Cluster 1 1
===================
Rbridge Id: 101, Session Vlan: 3999, Keep-Alive Vlan: 4001
Cluster State: Deploy
Client Isolation Mode: Loose
Configured Member Vlan Range: 100 to 105
Active Member Vlan Range: 100 to 105
MCT Peer's Reachability status using Keep-Alive Vlan: Peer Reachable
Client Info:
------------
Client: c1, rbridge-id: 300, Deployed
Client Port: 3/11
State: Up
Number of times Local CCEP down: 0
Number of times Remote CCEP down: 0
Number of times Remote Client undeployed: 0
Total CCRR packets sent: 4
Total CCRR packets received: 3
```

The following example displays sample output of the **show cluster** command displaying information for the **ccp** and **peer** options.

```
device# show cluster 1 ccp peer
...
PEER IP ADDRESS       STATE             UP TIME
---------------       -------------     --------------
 10.1.1.1             OPERATIONAL       0 days: 2 hr:25 min:16 sec
```

The following example displays sample detailed output of the **show cluster** command for the **ccp** and **peer** options:

```
device# show cluster 1 ccp peer detail

**************Peer Session Details*********************
IP address of the peer                          10.1.1.1
Rbridge ID of the peer                          100
Session state of the peer                       OPERATIONAL
Next message ID to be send                      287
Keep Alive interval in seconds                  30
Hold Time Out in seconds                        90
Fast Failover is enable for the session
UP Time                                          0 days: 2 hr:22 min:58 sec
Number of  tcp packet allocations failed           0
Message    Init          Keepalive     Notify        Application   Badmessages
Send       3             2421          2             53            0
Receive    3             2415          0             37            0
TCP connection is up
TCP connection is initiated by                  10.1.1.2
TCP connection tcbHandle not pending
TCP connection  packets not received
**************TCP Connection Details*********************
    TCP Connection state: ESTABLISHED      Maximum segment size: 1436
       Local host:  10.1.1.2, Local  Port: 12203
       Remote host: 10.1.1.1, Remote Port: 4175
       ISentSeq: 1867652277  SendNext: 1867660731  TotUnAck:          0
       TotSent:        8454  ReTrans:           9  UnAckSeq: 1867660731
       IRcvSeq:  3439073167  RcvNext:  3439078415  SendWnd:       16384
       TotalRcv:       5248  DupliRcv:         16  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1452
```

The following example displays sample output of the **show cluster** command displaying updated information to indicate that the reason for the CCP down may be caused by a board type mismatch. The updated text is highlighted in bold. This example is only applicable to the Ruckus ICX 7850 platform running a FastIron 08.0.90 image.

```
device# show cluster

Cluster MgM 3000
=============
Rbridge Id: 3, Session Vlan: 3000, Keep-Alive Vlan: 3001
Cluster State: Deploy
Client Isolation Mode: Loose
Member Vlan Range:
MCT Peer's Reachability using Keep-Alive Vlan: Peer Unreachable

 ICL Info:
 ---------
 Name            Port       Trunk
 MgM-MCT         lg1        1

 Peer Info:
 ----------
 Peer IP: 1.1.1.2, Peer Rbridge Id: 2, ICL: MgM-MCT
 KeepAlive Interval: 10 , Hold Time: 90, Fast Failover
 Active Vlan Range:
 Last Reason for CCP Down: Image version or board type doesn't match with peer
 Peer State: CCP Down (CCP is Down)
 Reason for CCP Down: Image version or board type doesn't match with
peer
 Sequence Number Sent: 104
 Sequence Number Received: 0
 Number of Out-Of-Sequence Packets Received: 0

 Client Info:
 ------------
 Number of Clients configured: 1
 Name    Rbridge-id Config      Port       Trunk FSM-State
 ttt     30         Undeployed  -          -
```

The following example indicates that the CCP is down because of a software image mismatch with its peer.

```
device# show cluster
Cluster mct_mm_stk 1000, version 2
====================
Rbridge Id: 1029, Session Vlan: 1000, Keep-Alive Vlan: 1999
Cluster State: Deploy
Client Isolation Mode: Loose
Member Vlan Range: 1001 to 1002 3001 to 3150
MCT Peer's Reachability using Keep-Alive Vlan: Peer Reachable
 ICL Info:
 ---------
 Name            Port       Trunk
 icl_mm          lg1        1
 Peer Info:
 ----------
 Peer IP: 11.1.1.1, Peer Rbridge Id: 1019, ICL: icl_mm
 KeepAlive Interval: 30 , Hold Time: 90, Fast Failover
 Active Vlan Range:
 Last Reason for CCP Down: Image version doesn't match with peerPeer State: Reachable (CCP is Down)
 Reason for CCP Down: Image version doesn't match with peer
 Sequence Number Sent: 1440
 Sequence Number Received: 1421
 Number of Out-Of-Sequence Packets Received: 0

 Client Info:
 ------------
 Number of Clients configured: 3
 Name                    Rbridge-id Config      Port       Trunk FSM-State
 C1                      3          Deployed    lg3          3    Master Peer Reachabl
 C2                      4          Deployed    lg4          4    Slave
 c101                    101        Deployed    lg101        101  Slave
device# show cluster
Cluster mct_mm_stk 1000, version 2
====================
Rbridge Id: 1029, Session Vlan: 1000, Keep-Alive Vlan: 1999
Cluster State: Deploy
Client Isolation Mode: Loose
Member Vlan Range: 1001 to 1002 3001 to 3150
MCT Peer's Reachability using Keep-Alive Vlan: Peer Reachable
 ICL Info:
 ---------
 Name            Port       Trunk
 icl_mm          lg1        1
 Peer Info:
 ----------
 Peer IP: 11.1.1.1, Peer Rbridge Id: 1019, ICL: icl_mm
 KeepAlive Interval: 30 , Hold Time: 90, Fast Failover
 Active Vlan Range:
 Last Reason for CCP Down: Image version doesn't match with peer
 Peer State: Reachable (CCP is Down)
 Reason for CCP Down: Image version doesn't match with peer
 Sequence Number Sent: 1445
 Sequence Number Received: 1426
 Number of Out-Of-Sequence Packets Received: 0

 Client Info:
 ------------
 Number of Clients configured: 3
 Name                    Rbridge-id Config      Port       Trunk FSM-State
 C1                      3          Deployed    lg3          3    Master Peer Reachabl
 C2                      4          Deployed    lg4          4    Slave
 c101                    101        Deployed    lg101        101  Slave
```

History

Release version	Command history
08.0.90	The command was modified to include output for the **ccp** option to indicate the reason for a CCP down may be caused by a board type mismatch.
09.0.10	The command was modified to include output to show CCP peer software image mismatches.

show configuration

Displays the configuration data in the startup configuration file.

Syntax

show configuration

Modes

User EXEC mode

Examples

The following example is sample output from the **show configuration** command.

```
device# show configuration
!
Startup-config data location is flash memory
!
Startup configuration:
!
ver 08.0.20
!
stack unit 1
  module 1 icx7650-48p-port-management-module
  module 3 icx7650-100g-2port-200g-module
  stack-port 1/3/1
  stack-port 1/3/2
!
!
boot sys fl sec
ip address 10.25.224.197 255.255.255.0 dynamic
ip dns domain-list englab.ruckus.com
ip dns server-address 10.31.2.10
!
!
!
!
!
end
```

History

Release version	Command history
08.0.61	This command was modified to include information about dynamically obtained DHCP options.

show cpu histogram

Displays the CPU usage histogram for the device, and optionally, clears the hold time and wait time.

Syntax

show cpu histogram [**clear** | **holdtime** | **waittime**]

Parameters

clear

Displays the CPU usage histogram and clears the hold time and wait time.

holdtime

Displays the CPU hold time usage histogram.

waittime

Displays the CPU wait time usage histogram.

Modes

Global configuration mode

User EXEC

Usage Guidelines

Use this command to display the CPU hold time and wait time usage histogram.

Command Output

The **show cpu histogram** command displays the following information:

Output field	Description
No. of buckets	The CPU usage histogram is presented in the form of buckets. Usage is divided into different intervals called buckets.
Bucket granularity	The time interval at which the CPU usage information is collected for each bucket.
Last clear	The datestamp when the task was cleared last.

Examples

The following command displays the CPU hold time usage histogram.

```
device# show cpu histogram holdtime

CPU Histogram Info
------------------
No. of Buckets     : 11
Bucket Granularity : 50 msec
No. of Tasks       : 14
Last clear         : Jan  1 18:11:39.414

-------------------------------------------------------------------------------------------------------
 Task                |   Bkt |  Bkt      | Total      | Last         | Max          |     Max Hold at   |
 Name                |   Num |  Time(ms)| Count      | HoldTime(ms)| HoldTime(ms)|
                     |
-------------------------------------------------------------------------------------------------------
appl                        1     000-050  758226345         9.521        46.543
Jan  1 18:50:16.857
appl                        2     050-100          4        50.967        52.324
Jan  1 18:46:00.638
rtm                         1     000-050      44197         0.008         0.283
Jan  1 18:33:37.651
rtm6                        1     000-050      44197         0.005         0.415
Jan  1 18:18:31.476
ospf                        1     000-050      44197         0.004         1.177
Jan  1 19:02:29.746
openflow_opm                1     000-050       9118         0.007         0.239
Jan  1 18:15:01.952
mcast                       1     000-050      90565         0.004         0.143
Jan  1 18:29:04.325
msdp                        1     000-050       4425         0.007         0.201
Jan  1 19:15:34.419
ospf6                       1     000-050      44197         0.007         0.257
Jan  1 18:44:58.033
mcast6                      1     000-050      90565         0.004         0.181
Jan  1 18:36:38.346
rmon                        1     000-050       4425         0.028         5.787
Jan  1 19:24:47.464
web                         1     000-050      88335         0.010         0.368
Jan  1 18:29:48.222
acl                         1     000-050       2360         0.015         0.177
Jan  1 18:22:40.049
ntp                         1     000-050       4425         0.007         0.011
Jan  1 18:11:40.713
console                     1     000-050      88337         0.008        35.227
Jan  1 18:11:39.498
-------------------------------------------------------------------------------
--------------------
```

The following example displays the CPU wait time usage histogram.

```
device# show cpu histogram waittime
CPU Histogram Info
------------------
No. of Buckets     : 11
Bucket Granularity : 50 msec
No. of Tasks       : 14
Last clear         : Jan  1 18:11:39.414

-------------------------------------------------------------------------------------------------------
 Task               |   Bkt |  Bkt     | Total     | Last         | Max          |     Max Wait at   |
 Name               |   Num |  Time(ms)| Count     | WaitTime(ms)| WaitTime(ms)|
                    |
-------------------------------------------------------------------------------------------------------
rtm                       1     000-050      44876         0.008         0.283
Jan  1 18:50:16.857
rtm6                      1     000-050      44876         0.005         0.415
Jan  1 18:50:16.857
ospf                      1     000-050      44876         0.065         1.177
Jan  1 18:50:16.857
openflow_opm              1     000-050       9258         0.006         0.239
Jan  1 19:07:56.599
mcast                     1     000-050      91957         0.005         0.143
Jan  1 18:50:16.857
msdp                      1     000-050       4493         0.008         0.201
Jan  1 18:28:40.956
ospf6                     1     000-050      44876         0.007         0.257
Jan  1 18:50:16.857
mcast6                    1     000-050      91957         0.004         0.181
Jan  1 18:50:16.857
rmon                      1     000-050       4493         0.030         5.787
Jan  1 18:28:40.956
web                       1     000-050      89691         0.009         0.368
Jan  1 18:50:16.857
acl                       1     000-050       2397         0.018         0.177
Jan  1 18:33:17.172
ntp                       1     000-050       4493         0.007         0.011
Jan  1 18:28:40.956
console                   1     000-050      89693         0.010        35.227
Jan  1 18:50:16.857
-------------------------------------------------------------------------------
```

The following example clears the CPU usage histogram information.

```
device# show cpu histogram clear

CPU Histogram Info
------------------
No. of Buckets     : 11
Bucket Granularity : 50 msec
No. of Tasks       : 14
Last clear         : Jan  1 18:11:39.414

-------------------------------------------------------------------------------------------------------
 Task                |   Bkt |  Bkt     | Total     | Last         | Max          |     Max Hold at    |
 Name                |   Num |  Time(ms)| Count     | HoldTime(ms)| HoldTime(ms)|
                    |
-------------------------------------------------------------------------------------------------------
appl                      1     000-050   793262215        0.003        46.543
Jan  1 18:50:16.857
appl                      2     050-100           4       50.967        52.324
Jan  1 18:46:00.638
rtm                       1     000-050       46242         0.009         0.283
Jan  1 18:33:37.651
rtm6                      1     000-050       46242         0.005         0.415
Jan  1 18:18:31.476
ospf                      1     000-050       46242         0.006         1.177
Jan  1 19:02:29.746
openflow_opm              1     000-050        9540         0.007         0.239
Jan  1 18:15:01.952
mcast                     1     000-050       94771         0.003         0.143
Jan  1 18:29:04.325
msdp                      1     000-050        4629         0.008         0.201
Jan  1 19:15:34.419
ospf6                     1     000-050       46242         0.006         0.257
Jan  1 18:44:58.033
mcast6                    1     000-050       94771         0.003         0.181
Jan  1 18:36:38.346
rmon                      1     000-050        4629         0.137         5.787
Jan  1 19:24:47.464
web                       1     000-050       92421         0.007         0.368
Jan  1 18:29:48.222
acl                       1     000-050        2470         0.006         0.177
Jan  1 18:22:40.049
ntp                       1     000-050        4629         0.006         0.011
Jan  1 18:11:40.713
console                   1     000-050       92423         0.008        35.227
Jan  1 18:11:39.498
-------------------------------------------------------------------------------------------------------

CPU Histogram Info
------------------
No. of Buckets     : 11
Bucket Granularity : 50 msec
No. of Tasks       : 14
Last clear         : Jan  1 18:11:39.414

-------------------------------------------------------------------------------------------------------
 Task                |   Bkt |  Bkt     | Total     | Last         | Max          |     Max Wait at    |
 Name                |   Num |  Time(ms)| Count     | WaitTime(ms)| WaitTime(ms)|
                    |
-------------------------------------------------------------------------------------------------------
rtm                       1     000-050       46242         0.009         0.283
Jan  1 18:50:16.857
rtm6                      1     000-050       46242         0.005         0.415
Jan  1 18:50:16.857
ospf                      1     000-050       46242         0.006         1.177
Jan  1 18:50:16.857
openflow_opm              1     000-050        9540         0.007         0.239
Jan  1 19:07:56.599
mcast                     1     000-050       94771         0.003         0.143
Jan  1 18:50:16.857
msdp                      1     000-050        4629         0.008         0.201
```

```
Jan  1 18:28:40.956
ospf6                    1     000-050      46242         0.006         0.257
Jan  1 18:50:16.857
mcast6                   1     000-050      94771         0.003         0.181
Jan  1 18:50:16.857
rmon                     1     000-050       4629         0.137         5.787
Jan  1 18:28:40.956
web                      1     000-050      92421         0.007         0.368
Jan  1 18:50:16.857
acl                      1     000-050       2470         0.006         0.177
Jan  1 19:28:22.095
ntp                      1     000-050       4629         0.006         0.011
Jan  1 18:28:40.956
console                  1     000-050      92423         0.008        35.227
Jan  1 18:50:16.857
-------------------------------------------------------------------------------------------------
CPU Histogram data cleared
```

History

Release version	Command history
08.0.30	This command was introduced.

show cpu-utilization

Displays the CPU histogram for the device, and optionally, the CPU utilization for each task running on the device.

Syntax

show cpu [**tasks**]

Parameters

tasks

Specifies the display of CPU utilization information for each task running on the device.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

Examples

The following example displays the CPU histogram for the device.

```
device# show cpu-utilization
cpu0:
1 percent busy, from 8213 sec ago
1   sec avg:  1 percent busy
5   sec avg:  1 percent busy
60  sec avg:  1 percent busy
300 sec avg:  1 percent busy
cpu1:
0 percent busy, from 7402 sec ago
1   sec avg: 0 percent busy
5   sec avg: 0 percent busy
60  sec avg: 0 percent busy
300 sec avg: 0 percent busy
```

The following example displays the CPU utilization for each task on the device.

```
device# show cpu tasks
... Usage average for all tasks in the last 1 second ...
============================================================
Name                                    %

SigHdlrTsk                              0
OsTsk                                   0
TimerTsk                                0
FlashTsk                                0
MainTsk                                 0
MportPollTsk                            0
IntrTsk                                 0
keygen                                  0
itc                                     0
bcmDPC                                  0
bcmINTR                                 3
socdmadesc.0                            0
bcmCNTR.0                               3
bcmTX                                   0
bcmXGS3AsyncTX                          0
bcmRX                                   0
bcmL2MOD.0                              0
scp                                     0
appl                                    86
snms                                    0
rtm                                     0
rtm6                                    0
rip                                     0
bgp                                     0
bgp_io                                  0
ospf                                    0
ospf_r_calc                             0
mcast_fwd                               0
mcast                                   0
msdp                                    0
ripng                                   0
ospf6                                   0
ospf6_rt                                0
mcast6                                  0
ipsec                                   0
dhcp6                                   0
snmp                                    0
rmon                                    0
web                                     0
acl                                     0
ntp                                     0
console                                 0
ospf_msg_task                           0
auxTsk                                  0
```

History

Release version	Command history
08.0.30	This command was introduced.
08.0.50	The command output was modified to show information for cpu0 and cpu1.

show default

Displays the system default settings of the device.

Syntax

show default [**values**]

Parameters

values

Displays default, maximum, current, and configured values for system parameters.

Modes

Privileged EXEC mode

Examples

The following output displays the system default settings.

```
device# show default
spanning tree disabled      fast port span disabled
auto sense port speed       port untagged               port flow control on
no username assigned        no password assigned        boot sys flash primary
system traps enabled        ntp disabled                radius disabled
rip disabled                ospf disabled               bgp disabled

when ip routing enabled :
ip irdp disabled            ip load-sharing enabled     ip proxy arp disabled
ip rarp enabled             ip bcast forward disabled
dvmrp disabled              pim/dm disabled
vrrp disabled               fsrp disabled

when rip enabled :
rip type:v2 only            rip poison rev enabled

ipx disabled                appletalk disabled
```

The following output displays the system default parameter values.

```
device# show default values
sys log buffers:50         mac age time:300 sec       telnet sessions:5

ip arp age:10 min          bootp relay max hops:4     ip ttl:64 hops
ip addr per intf:24

when multicast enabled :
igmp group memb.:260 sec   igmp query:125 sec         hardware drop: enabled

when ospf enabled :
ospf dead:40 sec           ospf hello:10 sec          ospf retrans:5 sec
ospf transit delay:1 sec

when bgp enabled :
bgp local pref.:100        bgp keep alive:60 sec      bgp hold:180 sec
bgp metric:10              bgp local as:1             bgp cluster id:0
bgp ext. distance:20       bgp int. distance:200      bgp local distance:200

System Parameters    Default    Maximum    Current    Configured
ip-arp               4000       64000      4000       4000
ip-static-arp        512        6000       512        512
ip-cache             10000      32768      10000      10000
ip-filter-port       3071       3071       3071       3071
ip-filter-sys        3072       16384      3072       3072
l3-vlan              32         1024       32         32
ip-qos-session       1024       16000      1024       1024
mac                  32768      32768      32768      32768
ip-route             12000      15168      12000      12000
ip-static-route      64         2048       64         64
vlan                 64         4095       64         64
spanning-tree        32         254        32         32
mac-filter-port      32         256        32         32
mac-filter-sys       64         512        64         64
ip-subnet-port       24         128        24         24
session-limit        8192       16384      8192       8192
view                 10         65535      10         10
virtual-interface    255        512        255        255
hw-ip-next-hop       13312      14336      13312      13312
hw-traffic-condition 50         1024       50         50
rmon-entries         1024       32768      1024       1024
igmp-snoop-mcache    512        8192       512        512
mld-snoop-mcache     512        8192       512        512
ip6-route            5120       5120       5120       5120
ip6-static-route     178        1024       1024       1024
ip6-cache            5120       5120       5120       5120
msdp-sa-cache        4096       8192       4096       4096
gre-tunnels          16         64         24         24
ip-vrf               32         32         32         32
ip-route-default-vrf 12000      15168      12000      12000
ip6-route-default-vr 5120       5120       5120       5120
ip-route-vrf         1024       15168      1024       1024
ip6-route-vrf        100        5120       100        100
pim-hw-mcache        1024       6144       1024       1024
pim6-hw-mcache       512        1024       512        512
igmp-snoop-group-add 4096       8192       4096       4096
mld-snoop-group-addr 4096       8192       4096       4096
mac-notification-buf 4000       16000      4000       4000
dot1x-mka-policy-gro 8          8          8          8
openflow-flow-entrie 3072       12288      3072       3072
openflow-pvlan-entri 40         40         40         40
openflow-unprotected 40         40         40         40
openflow-nexthop-ent 1024       3072       1024       1024
max-ip-mac           120        248        120        120
max-dhcp-snoop-entri 1024       3072       1024       1024
max-static-inspect-a 512        1024       512        512
pms-global-pool      8192       8192       8192       8192
```

History

Release version	Command history
08.0.70	The command output displayed PMS global pool default values.

show default values

Displays default, maximum, current, and configured values for system maximum parameters.

Syntax

show default values

Modes

User EXEC mode

Examples

The following example does not show complete output; it displays information about PIM hardware mcache values.

```
device> show default values

System Parameters     Default    Maximum    Current    Configured
pim-hw-mcache         1024       6144       1500       1500
```

The following example does not show complete output; it displays information about PIM6 hardware mcache values.

```
device> show default values

System Parameters     Default    Maximum    Current    Configured
pim6-hw-mcache        512        1024       1024       1024
```

The following example does not show complete output; it displays information about MLD mcache values.

```
device> show default values

System Parameters     Default    Maximum    Current    Configured
mld-snoop-mcache      512        8192       512        512
```

The following example does not show complete output; it displays information about IGMP group values.

```
device> show default values

System Parameters     Default    Maximum    Current    Configured
igmp-snoop-group-add  4096       8192       5000       5000
```

The following example does not show complete output; it displays information about MLD group values.

```
device> show default values

System Parameters     Default    Maximum    Current    Configured
MLD-snoop-group-addr  4096       8192       5000       5000
```

The following example does not show complete output; it displays information about the configured forwarding profile.

```
ICX7850> show default values

sys log buffers:4000       mac age time:300 sec       telnet sessions:5
forwarding profile: profile3
mac                      :56320
ip-route                 :43008      ip6-route                :35840
igmp-snoop-mcache        :8192       igmp-snoop-group-addr    :8192
mld-snoop-mcache         :8192       mld-snoop-group-addr     :8192
pim-hw-mcache            :8192       pim6-hw-mcache           :8192
hw-ip-next-hop           :57344
```

History

Release version	Command history
08.0.90	The output for this command was updated to display information about the selected forwarding profile and the related scale numbers for ICX 7850 devices.
08.0.95	The output for this command was updated to not display information about the maximum number of DHCP snooping entries.

show dlogger logs

Displays the logged messages from circular buffer maintained by the distributed logger module.

Syntax

show dlogger logs { **all** | **module** *module-name* } [**dump**]

Parameters

all

Displays all module logged messages beginning with newer logs first.

module *module-name*

Displays module specific logged messages.

dump

Displays all module logged messages beginning with older logs first.

Modes

Privileged EXEC mode

Usage Guidelines

You can get the list of distributed logger module names from the **show dlogger module filter** command.

Logs of certain modules that are registered to avail distributed logger facility that do not have filtering capability are also logged into the circular buffer.

Examples

The following example displays all module logged messages.

```
device# show dlogger logs all
0:17:36 : 3:arp:arp:[arp intf(mgmt1) phy-port count = 1] [phy-port(mgmt1) arp count = 1]
0:17:36 : 3:arp:arp:mac_l3_map_delete 314. count 0
0:17:36 : 3:arp:arp:
mac_l3_delete_list_node 203 delete node 10.177.144.3 count 0
0:17:36 : 3:arp:arp:
mac_l3_delete_list_node 194 delete node 10.177.144.3 count 1
0:17:36 : 3:arp:arp:
mac_l3_delete_list_node 184 called for 10.177.144.3
0:17:36 : 3:arp:arp:     node d263c0d5 arp_mac d263c0d5
 Node Found0:17:36 : 3:arp:arp:  0 node d263c0d5 arp_mac d263c0d5
0:17:36 : 3:arp:arp:
mac_l3_is_node_in_list 109: searching node 10.177.144.3(0xd263c0d5) count 1 present
0:17:36 : 3:arp:arp:mac_l3_map_delete 305. count 1
0:17:36 : 3:arp:arp:ip_arp_interface_list_delete_dynamic_entry:ARP 10.177.144.3 is deleted from port
list for mgmt1 phy mgmt1
0:17:36 : 3:arp:arp:delete_arp, ip=10.177.144.3, t=DYNAMIC, age=10, rtr=0, pend=0, out=emgmt1, v
port=mgmt1, NH=4294967295
0:17:36 : 3:arp:arp:Arp age entry: Delete arp 10.177.144.3: Arp Timer: 10, Arp age out: 10
, ip=10.177.144.3, t=DYNAMIC, age=10, rtr=0, pend=0, out=emgmt1, v port=mgmt1, NH=4294967295
0:14:27 : 3:arp:arp:arp_event_handler: L2 EVENT: EVENT_ID_MAC_DELETE: vlan 11 port lg15  mac address
609c.9f52.7bf4
0:14:27 : 3:arp:arp:arp_event_handler: arp_event handler: received event 113
0:7:40 : 3:appl:arp:process_l3_unicast_download_request route_num 0, beg=1, ip_addr 0.0.0.0,
virtual_port_num INVALID
0:6:41 : 3:appl:SPX_RING:[portext_ring_process_dwld_request]: Processed download request from unit 2
(number of cb_chain :0)
0:6:41 : 3:appl:SPX_RING:[portext_ring_process_dwld_request]: Received download request from unit 2
(trunk id: 0)
0:6:34 : 3:appl:l3interface:sync pack trunk flushed: trunk id 15 packet index 20 msg index 0 num of
entries 1
0:6:34 : 3:appl:l3interface:pack_trunk: Module trunk msg done group id 15 trunk id 15 num of ports 8
num of entries 1 operation sync module trunk add
0:6:29 : 3:appl:sec_macsec:cli:err:[LOGON][CONFIG] - Key is not configured
```

The following example displays module-specific logged messages.

```
device# show dlogger logs module sec_macsec
0:6:29 : 3:appl:sec_macsec:cli:err:[LOGON][CONFIG] - Key is not configured
0:6:29 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 0
0:6:29 : 3:appl:sec_macsec:stacking:err:[Master][Port-Indication][Req] Port 1/2/1
0:6:29 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 1
0:6:29 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 1
0:6:28 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 0
0:5:11 : 3:appl:sec_macsec:cli:err:[LOGON][CONFIG] - Key is not configured
0:5:11 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 0
0:5:11 : 3:appl:sec_macsec:stacking:err:[Master][Port-Indication][Req] Port 1/2/1
0:5:11 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 1
0:5:11 : 3:appl:sec_macsec:stacking:err:[Master][Port-Cfg] Port 1/2/1, Enable 1
```

History

Release version	Command history
09.0.00	This command was introduced.

show dlogger module

Displays distributed logger modules that are available, including their filtering capability status details and filter configuration information.

Syntax

show dlogger module [**filter** [**config-fltr** | **lm-map**] | **log-manager**]

Parameters

filter
: Displays all modules and submodules.

config-fltr
: Displays the filter configuration of all modules and sub-modules.

lm-map
: Displays the mapping of distributed logger modules to log manager.

log-manager
: Displays log manager modules.

Modes

Privileged EXEC mode

Usage Guidelines

The **lm-map** keyword displays the mapping of distributed logger modules to log manager modules and sub-modules. When you issue the **show logging debug** command, the modules and sub-modules must be specified based on the mapping of distributed logger modules to log manager displayed in the **show dlogger module filter lm-map** command output.

Examples

The following example displays the modules and filter configuration information.

```
device# show dlogger module
Total Allocated 9000 , Total Freed - 0
Failed - 0
Redirect to fi_debug: Disabled
Log into Circular buffer : Enabled
Logger User Lists(40):
------------------------------------------------------------
 Idx Module               Filter
------------------------------------------------------------
   1 DY-SYNC-ISSU-NOTIF   No
   2 l3interface          Yes
   3 VXLAN                No
   4 l3mcast              Yes
   5 REMOTE_SERVICE       No
   6 bfd                  Yes
   7 BFD-AG               No
   8 arp                  Yes
   9 ARP_AGING_PENDING    No
  10 ARP_SYNC             No
  11 nexthop-mgr          Yes
  12 l2mcast              No
  13 mcrep-sc             Yes
  14 SPX_RING             No
  15 MCLIENTS             No
  16 ipv4-unicast         Yes
  17 ipv6-unicast         Yes
  18 openflow             Yes
  19 urpf                 Yes
  20 ipsec                No
  21 ip-nexthop           Yes
  22 keychain             Yes
  23 remote-ping          Yes
  24 remote-traceroute    Yes
  25 igmp-snoop           Yes
  26 mld-snoop            Yes
  27 mcrep-lc             Yes
  28 sec_acl              Yes
  29 sec_acl_acct         Yes
  30 sec_macsec           Yes
  31 sec_dhcpsnoop        Yes
  32 sec_dhcp6snoop       Yes
  33 sec_ndi              Yes
  34 sec_raguard          Yes
  35 sec_brl              Yes
  36 sec_pbrl             Yes
  37 sec_aclinfra         Yes
  38 webauth              Yes
  39 flexauth             Yes
  40 icb-mcast            No
```

The following example displays all registered modules and sub-modules.

```
device# show dlogger module filter
Total Module 40
Logger Resigtered Module:
-----------------------------------------------------------
 Idx Module               Sub-Modules
-----------------------------------------------------------
   2 l3interface          ingress          egress          routing-setting route-only
                          ip-port-db-trie  bandwidth
   4 l3mcast              control          hardware        res-sharing     hitless
                          mct-ctrl         mct-events      mct-forw
   6 bfd                  error            event           ipc             itc
                          arp-nbr          state           app             hover
                          ha               issu            p-timer
   8 arp                  create-delete    packets         processing      sync
                          pending          aging
  11 nexthop-mgr          mgr              index           entry
  13 mcrep-sc             ctrl
  16 ipv4-unicast         route            host
  17 ipv6-unicast         route
  18 openflow             of-config        of-engine       of-opm          of-forwarding
                          of-sync          of-mcrepsync    of-flowsync     of-groupsync
                          of-metersync     acl             acl-flow        acl-config
  19 urpf                 hwroute
  21 ip-nexthop           nexthop          ipsec-nh        aging
  22 keychain             config           events
  23 remote-ping          control-table    result          sync            trap
  24 remote-traceroute    control-table    result          sync            trap
  25 igmp-snoop           aging            hardware        ctrl            forw
                          mcache-sync      flooding        mct-ctrl        mct-forw
                          mct-sync         mct-events
  26 mld-snoop            aging            hardware        ctrl            forw
                          mcache-sync      flooding        mct-ctrl        mct-forw
                          mct-sync         mct-events
  27 mcrep-lc             ctrl             sync            hw
  28 sec_acl              dev              cpss            task            cli
                          hitless          tcam            stacking        sourceguard
                          port_ext         distfw          pehs            rps_mgr
                          blss_mgr         pehs_mgr        peds_mgr        hadt_mgr
                          ghda_mgr         qremark         tpd             pbrl
                          mac              dai             ipv4            ipv6
                          itc              event           timer           mirror
                          ddos_attack      slowpath        log
  29 sec_acl_acct         acldev           cpss            task            cli
                          hitless          stacking        sub8_
  30 sec_macsec           cli              keygen          mka             tx
                          rx               pdu             stacking        platform
  31 sec_dhcpsnoop        packet           database        config          timer
                          file
  32 sec_dhcp6snoop       packet           database        config          timer
                          file
  33 sec_ndi              packet           database        config          timer
  34 sec_raguard          cli              aclinfra        ssrf            packet
  35 sec_brl              cli              core            pd
  36 sec_pbrl             cli              api             core            itc
                          hal
  37 sec_aclinfra         ale              ali             common          core
                          debug            pd
  38 webauth              packets          events          timers          hitless
                          filters          misc
  39 flexauth             packets          events          timers          hitless
                          vlan             filters         misc            ddm
                          radius           session         aging           dist
                          stacking         itc             counters        dot1x
```

The following example displays registered module and submodule configuration.

```
device# show dlogger module filter config-fltr
 dlogger module l3interface sub-module ingress severity emergency alert critical error
 dlogger module l3interface sub-module egress severity emergency alert critical error
 dlogger module l3interface sub-module routing-settings severity emergency alert critical error
 dlogger module l3interface sub-module route-only severity emergency alert critical error
 dlogger module l3interface sub-module ip-port-db-trie severity emergency alert critical error
 dlogger module l3interface sub-module bandwidth severity emergency alert critical error
 dlogger module l3mcast sub-module control severity emergency alert critical error
 dlogger module l3mcast sub-module hardware severity emergency alert critical error
 dlogger module l3mcast sub-module res-sharing severity emergency alert critical error
 dlogger module l3mcast sub-module hitless severity emergency alert critical error
 dlogger module l3mcast sub-module mct-ctrl severity emergency alert critical error
 dlogger module l3mcast sub-module mct-events severity emergency alert critical error
 dlogger module l3mcast sub-module mct-forw severity emergency alert critical error
 dlogger module bfd sub-module error severity emergency alert critical error
 dlogger module bfd sub-module event severity emergency alert critical error
 dlogger module bfd sub-module ipc severity emergency alert critical error
 dlogger module bfd sub-module itc severity emergency alert critical error
 dlogger module bfd sub-module arp-nbr severity emergency alert critical error
 dlogger module bfd sub-module state severity emergency alert critical error
 dlogger module bfd sub-module app severity emergency alert critical error
 dlogger module bfd sub-module hover severity emergency alert critical error
 dlogger module bfd sub-module ha severity emergency alert critical error
 dlogger module bfd sub-module issu severity emergency alert critical error
 dlogger module bfd sub-module p-timer severity emergency alert critical error
 dlogger module arp sub-module create-delete severity emergency alert critical error
 dlogger module arp sub-module packets severity emergency alert critical error
 dlogger module arp sub-module processing severity emergency alert critical error
 dlogger module arp sub-module sync severity emergency alert critical error
 dlogger module arp sub-module pending severity emergency alert critical error
 dlogger module arp sub-module aging severity emergency alert critical error
 dlogger module nexthop-mgr sub-module mgr severity emergency alert critical error
 dlogger module nexthop-mgr sub-module index severity emergency alert critical error
 dlogger module nexthop-mgr sub-module entry severity emergency alert critical error
 dlogger module mcrep-sc sub-module ctrl severity emergency alert critical error
 dlogger module ipv4-unicast sub-module route severity emergency alert critical error
 dlogger module ipv4-unicast sub-module host severity emergency alert critical error
 dlogger module ipv6-unicast sub-module route severity emergency alert critical error
 dlogger module openflow sub-module of-config severity emergency alert critical error
 dlogger module openflow sub-module of-engine severity emergency alert critical error
 dlogger module openflow sub-module of-opm severity emergency alert critical error
 dlogger module openflow sub-module of-forwarding severity emergency alert critical error
 dlogger module openflow sub-module of-sync severity emergency alert critical error
 dlogger module openflow sub-module of-mcrepsync severity emergency alert critical error
 dlogger module openflow sub-module of-flowsync severity emergency alert critical error
 dlogger module openflow sub-module of-groupsync severity emergency alert critical error
 dlogger module openflow sub-module of-metersync severity emergency alert critical error
 dlogger module openflow sub-module acl severity emergency alert critical error
 dlogger module openflow sub-module acl-flow severity emergency alert critical error
 dlogger module openflow sub-module acl-config severity emergency alert critical error
 dlogger module urpf sub-module hwroute severity emergency alert critical error
 dlogger module ip-nexthop sub-module nexthop severity emergency alert critical error
 dlogger module ip-nexthop sub-module ipsec-nh severity emergency alert critical error
 dlogger module ip-nexthop sub-module aging severity emergency alert critical error
 dlogger module keychain sub-module config severity emergency alert critical error
 dlogger module keychain sub-module events severity emergency alert critical error
 dlogger module remote-ping sub-module control-table severity emergency alert critical error
 dlogger module remote-ping sub-module result severity emergency alert critical error
 dlogger module remote-ping sub-module sync severity emergency alert critical error
 dlogger module remote-ping sub-module trap severity emergency alert critical error
 dlogger module remote-traceroute sub-module control-table severity emergency alert critical error
 dlogger module remote-traceroute sub-module result severity emergency alert critical error
 dlogger module remote-traceroute sub-module sync severity emergency alert critical error
 dlogger module remote-traceroute sub-module trap severity emergency alert critical error
 dlogger module mcrep-lc sub-module ctrl severity emergency alert critical error
 dlogger module mcrep-lc sub-module sync severity emergency alert critical error
 dlogger module mcrep-lc sub-module hw severity emergency alert critical error
 dlogger module sec_acl sub-module dev severity emergency alert critical error
 dlogger module sec_acl sub-module cpss severity emergency alert critical error
```

```
 dlogger module sec_acl sub-module task severity emergency alert critical error
 dlogger module sec_acl sub-module cli severity emergency alert critical error
 dlogger module sec_acl sub-module hitless severity emergency alert critical error
 dlogger module sec_acl sub-module tcam severity emergency alert critical error
 dlogger module sec_acl sub-module stacking severity emergency alert critical error
 dlogger module sec_acl sub-module sourceguard severity emergency alert critical error
 dlogger module sec_acl sub-module port_ext severity emergency alert critical error
 dlogger module sec_acl sub-module distfw severity emergency alert critical error
 dlogger module sec_acl sub-module pehs severity emergency alert critical error
 dlogger module sec_acl sub-module rps_mgr severity emergency alert critical error
 dlogger module sec_acl sub-module blss_mgr severity emergency alert critical error
 dlogger module sec_acl sub-module pehs_mgr severity emergency alert critical error
 dlogger module sec_acl sub-module peds_mgr severity emergency alert critical error
 dlogger module sec_acl sub-module hadt_mgr severity emergency alert critical error
 dlogger module sec_acl sub-module ghda_mgr severity emergency alert critical error
 dlogger module sec_acl sub-module qremark severity emergency alert critical error
 dlogger module sec_acl sub-module tpd severity emergency alert critical error
 dlogger module sec_acl sub-module pbrl severity emergency alert critical error
 dlogger module sec_acl sub-module mac severity emergency alert critical error
 dlogger module sec_acl sub-module dai severity emergency alert critical error
 dlogger module sec_acl sub-module ipv4 severity emergency alert critical error
 dlogger module sec_acl sub-module ipv6 severity emergency alert critical error
 dlogger module sec_acl sub-module itc severity emergency alert critical error
 dlogger module sec_acl sub-module event severity emergency alert critical error
 dlogger module sec_acl sub-module timer severity emergency alert critical error
 dlogger module sec_acl sub-module mirror severity emergency alert critical error
 dlogger module sec_acl sub-module ddos_attack severity emergency alert critical error
 dlogger module sec_acl sub-module slowpath severity emergency alert critical error
 dlogger module sec_acl sub-module log severity emergency alert critical error
 dlogger module sec_acl_acct sub-module acldev severity emergency alert critical error
 dlogger module sec_acl_acct sub-module cpss severity emergency alert critical error
 dlogger module sec_acl_acct sub-module task severity emergency alert critical error
```

The following example displays all registered modules mapped to Log Manager modules.

```
device# show dlogger module filter lm-map
Total Module 40
Logger Module to Log Manger Mapping:
------------------------------------------------------------
 Idx Logger-M             LogMgr-M             LogMgr-Sub-M
------------------------------------------------------------
   2 l3interface          fi_debug             debug_logs
   4 l3mcast              fi_debug             debug_logs
   6 bfd                  fi_debug             debug_logs
   8 arp                  fi_debug             debug_logs
  11 nexthop-mgr          fi_debug             debug_logs
  13 mcrep-sc             fi_debug             debug_logs
  16 ipv4-unicast         fi_debug             debug_logs
  17 ipv6-unicast         fi_debug             debug_logs
  18 openflow             fi_debug             debug_logs
  19 urpf                 fi_debug             debug_logs
  21 ip-nexthop           fi_debug             debug_logs
  22 keychain             fi_debug             debug_logs
  23 remote-ping          fi_debug             debug_logs
  24 remote-traceroute    fi_debug             debug_logs
  25 igmp-snoop           fi_debug             debug_logs
  26 mld-snoop            fi_debug             debug_logs
  27 mcrep-lc             fi_debug             debug_logs
  28 sec_acl              security             security_sub
  29 sec_acl_acct         fi_debug             debug_logs
  30 sec_macsec           security             macsec
  31 sec_dhcpsnoop        security             security_sub
  32 sec_dhcp6snoop       fi_debug             debug_logs
  33 sec_ndi              fi_debug             debug_logs
  34 sec_raguard          fi_debug             debug_logs
  35 sec_brl              fi_debug             debug_logs
  36 sec_pbrl             fi_debug             debug_logs
  37 sec_aclinfra         fi_debug             debug_logs
  38 webauth              security             webauth
  39 flexauth             security             flexauth
```

The following example displays the Log Manager modules.

```
device# show dlogger module log-manager
-------------------------------------------
S.No Module            Submodule
-------------------------------------------
   1 system            system_sub
   2 platform          platform_sub      chassis           link              plm
                       poe
   3 infra             stacking          cfg_sync_lib      cfg_sync_proc     qos
                       logmgr_lib        logmgr_proc       log_clf_fe        log_clf_be
                       conf_archive      infra_dbg         fitrace_fe        rcm
                       itc               ssave
   4 l2                vlan              lag               udld              mvrp
                       fdb               pvlan             stp               rstp
                       mstp              mrp               lldp              erlb
                       loam              l2port            mct               flexlink
   5 l3                l3_sub
   6 mcast             mcast_sub         l3mcast           mcrep             igmp-snoop
                       mld-snoop
   7 security          security_sub      ra_gaurd          dhcp6snoop        dhcpsnoop
                       ndi               macsec            acl_accounting    flexauth
                       webauth           fvcmgr            aclinfra          pbrl
                       brl               utp               gendistfw         sflow
                       ippolicy          sourcegaurd       aclhitless        dai
                       ddos
   8 management        nms_sub           clish             cli_dict          clam
                       lldp              restconf          dhcpv4_client     dhcpv4_server
                       dhcpv6_server     snmpagentd        manager           plugin
                       slam              aaa               snmpd_traps       web
                       rcm               cfg_par           nginx             uwsgi
                       rconsole
   9 fi_debug          debug_logs
```

History

Release version	Command history
09.0.00	This command was introduced.

show dot1x

Displays information about the 802.1X configuration.

Syntax

show dot1x

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

dot1x configuration mode

Command Output

The **show dot1x** command displays the following information:

Output field	Description
PAE Capability	The Port Access Entity (PAE) role for the device. This is always "Authenticator Only".
system-auth-control	Whether system authentication control is enabled on the device. The **dot1x-enable** command enables system authentication control on the device.
re-authentication	Whether periodic re-authentication is enabled on the device. When periodic re-authentication is enabled, the device automatically re-authenticates clients every 3,600 seconds by default.
global-filter-strict-security	Whether strict security mode is enabled or disabled globally.
quiet-period	When the device is unable to authenticate a client, the amount of time the device waits before trying again (default 60 seconds).
tx-period	When a client does not send back an EAP-response/identity frame, the amount of time the device waits before retransmitting the EAP-request/identity frame to a client (default 30 seconds).
supptimeout	When a client does not respond to an EAP-request frame, the amount of time before the device retransmits the frame.
servertimeout	When the Authentication Server does not respond to a message sent from the client, the amount of time before the device retransmits the message.
maxreq	The number of times the device retransmits an EAP-request/identity frame if it does not receive an EAP-response/identity frame from a client (default 2 times).
reAuthMax	The maximum number of re-authentication attempts.
re-authperiod	How often the device automatically re-authenticates clients when periodic re-authentication is enabled (default 3,600 seconds).
Protocol Version	The version of the 802.1X protocol in use on the device.

Examples

The following example displays information about the 802.1X configuration.

```
device# show dot1x

PAE Capability                    : Authenticator Only
system-auth-control               : Enable
re-authentication                 : Disable
global-filter-strict-security     : Enable
quiet-period                      : 60 Seconds
tx-period                         : 30 Seconds
supptimeout                       : 30 Seconds
servertimeout                     : 30 Seconds
maxreq                            : 2
reAuthMax                         : 2
re-authperiod                     : 3600 Seconds
Protocol Version                  : 1
```

show dot1x mac-address-filter

Displays the MAC address filters active on the device.

Syntax

show dot1x mac-address-filter [**all** | **ethernet** *unit/slot/port* | **user-defined**]

Parameters

all

Displays dynamically applied MAC address filters active on the device.

ethernet *unit/slot/port*

Displays dynamically applied MAC address filters active on an interface.

user-defined

Displays user-defined MAC address filters active on the device.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

dot1x configuration mode

Examples

The following example displays dynamically applied MAC address filters active on an interface.

```
device# show dot1x mac-address-filter ethernet 1/1/3
Port 1/3 MAC Address Filter information:
802.1X Dynamic MAC Address Filter :
mac filter-group 2
Port default MAC Address Filter:
No mac address filter is set
```

show dot1x mac-session

Displays information about the dot1x-MAC-session on each port on the device.

Syntax

show dot1x mac-sessions [**brief** | **ip-addr**]

Parameters

brief

Displays information about the dot1x-MAC-sessions in brief.

ip-addr

Displays dot1x-mac-session information with an IP address instead of a MAC address.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

dot1x configuration mode

Command Output

The **show dot1x mac-sessions** command displays the following information:

Output field	Description
Port	The port on which the dot1x-MAC-session exists.
MAC/IP (username)	The MAC address of the client and the username used for RADIUS authentication.
Vlan	The VLAN to which the port is currently assigned.
Auth-State	The authentication state of the dot1x-MAC-session. This can be one of the following states: • permit - The client has been successfully authenticated, and traffic from the client is being forwarded normally. • blocked - Authentication failed for the client, and traffic from the client is being dropped in hardware. • restricted - Authentication failed for the client, but traffic from the client is allowed in the restricted VLAN only. • init - The client is in is in the process of 802.1X authentication, or has not started the authentication process.
Age	The software age of the dot1x-MAC-session.

Output field	Description
PAE State	The current status of the Authenticator PAE state machine. This state can be INITIALIZE, DISCONNECTED, CONNECTING, AUTHENTICATING, AUTHENTICATED, ABORTING, HELD,FORCE_AUTH, or FORCE_UNAUTH. **NOTE** When the Authenticator PAE state machine is in the AUTHENTICATING state, if the reAuthenticate, eapStart, eapLogoff, or authTimeout parameters are set to TRUE, it may place the Authenticator PAE state machine indefinitely in the ABORTING state. If this should happen, use the **dot1x initialize** command to initialize 802.1X authentication on the port, or unplug the client or hub connected to the port, then reconnect it.

The **show dot1x mac-session brief** command displays the following information:

Output field	Description
Port	Information about the users connected to each port.
Number of users	The number of users connected to the port.
Number of Authorized users	The number of users connected to the port that have been successfully authenticated.
Dynamic VLAN	Whether the port is a member of a RADIUS-specified VLAN.
Dynamic ACL	Whether RADIUS-specified IP ACLs are applied to the port.
Dynamic MAC-Filter	Whether RADIUS-specified MAC address filters are applied to the port.

Examples

The following example displays information about the dot1x-MAC-session on each port on the device.

```
device# show dot1x mac-session
Port MAC/IP(username)           Vlan       Auth      ACL      Age    PAE
State State
-------------------------------------------------------------------------------
4/1/12 0044.0002.0002 :user1    10         permit    none     Ena    AUTHENTICATED
4/1/12 0044.0002.0003 :user2    10         permit    none     Ena    AUTHENTICATED
```

The following example displays information about the dot1x-MAC-session in brief.

```
device# show dot1x mac-session brief
Port           Number of    Number of           Dynamic     Dynamic   Dynamic
               users        Authorized users    VLAN        ACL       MAC-Filt
-----------------------------------------------------------------------
4/1/12         2            2                    no          no        no
```

show dot1x-mka config

Shows the MACsec Key Agreement (MKA) configuration for the device.

Syntax

show dot1x-mka config

Modes

User EXEC configuration mode

Command Output

The **show dot1x-mka config** command displays the following information:

Output field	Description
dot1x-mka-enable	MACsec is enabled on the device.
enable-mka ethernet *device/slot/port*	The ethernet interfaces specified are enabled for MACsec.
mka-cfg-group *group-name*	The configuration details that follow are for the named MACsec MKA group.
key-server-priority *value*	The key server priority for MACsec transmissions on the named group is set at this value.
macsec cipher-suite gcm-aes-128 or macsec cipher-suite gcm-aes-128 integrity-only	MACsec encryptions between members of the group are encrypted. or ICV checking only is performed, but no encryption is performed.
macsec confidentiality-offset *value*	The byte offset used for encrypted data is set to the value shown. Allowable values are 0, 30 (the first 30 bytes of data are not encrypted), and 50 (the first 50 bytes of data are not encrypted).
macsec frame-validation { check | discard }	For transmissions between MKA group members, indicates whether the MACsec frame header is checked and what action is taken for invalid frames (counted or discarded).
macsec-replay protection { strict | out-of-order window-size *value* }	Replay protection is enabled. The type of protection is shown as strict (discard any frame received out of sequence) or as allowing receipt of out-of-sequence frames within the specified window.
key *value* name *value*	The pre-shared key is set to this value and name for the MKA configuration group. Both key and name are hexadecimal strings.
enable ethernet *device/slot/port* mka-cfg-group *name* key *hexadecimal value* name *hexadecimal value*	The specified interface is enabled for MACsec. The interface belongs to the named MKA group, and the interface uses the pre-shared key shown to confirm peers with which it can communicate.

Examples

The following example displays MACsec configuration information for a device with MACsec enabled. Two MKA groups, test1 and group1, are configured. Interfaces with either group of parameters applied could form secure channels because the groups have the same pre-shared key.

```
device(config-dot1x-mka-1/3/2)# show dot1x-mka config

dot1x-mka-enable
 mka-cfg-group test1
  key-server-priority 5
  macsec cipher-suite gcm-aes-128 integrity-only
  macsec confidentiality-offset 30
  macsec frame-validation strict
mka-cfg-group group1
  key-server-priority 20
  macsec cipher-suite gcm-aes-128
  macsec confidentiality-offset 30
 enable-mka ethernet 1/3/2
  mka-group test1
  pre-shared-key 135bd758 b0ee5c11 c55ff6ab 19fdb199 key-name 96437a93 ccf10d9d fe347846 cce52c7d
 enable-mka ethernet 1/3/3
  mka-group group1
  pre-shared-key 135bd758 b0ee5c11 c55ff6ab 19fdb199 key-name 96437a93 ccf10d9d fe347846 cce52c7d
 enable-mka ethernet 1/3/4
  mka-group group1
  pre-shared-key 135bd758 b0ee5c11 c55ff6ab 19fdb199 key-name 96437a93 ccf10d9d fe347846 cce52c7d
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

show dot1x-mka config-group

Shows details for the specified MACsec Key Agreement (MKA) groups configured on this device, or for a designated MKA group.

Syntax

show dot1x-mka config-group*group-name*

Parameters

group-name

Limits the group configuration displayed to the named MKA group.

Modes

User EXEC mode

Command Output

The **show dot1x-mka config-group** command displays the following information:

Output field	Description
mka-cfg-group	The configuration details that follow are for the specified MACsec MKA group.
key-server-priority	The key-server priority for MACsec transmissions on the named group is set at te specified value.
macsec cipher-suite gcm-aes-128 or macsec cipher-suite gcm-aes-128 integrity-only	MACsec transmissions are encrypted. or ICV checking only is performed.
macsec confidentiality-offset	The byte offset used for encrypted data is set to the value shown. Allowable values are 0, 30 (the first 30 bytes of data are not encrypted), and 50 (the first 50 bytes of data are not encrypted).
macsec frame-validation {check | discard}	Indicates whether the MACsec frame header is checked and what action is taken for invalid frames (counted or discarded).
macsec replay-protection {strict | out-of-order window-size *size*}	Replay protection is enabled. The type of protection is shown as strict (discard any frame received out of sequence) or as allowing receipt of out-of-sequence frames within the specified window.

Examples

The following example lists the configuration details for MKA group test1.

```
device(config-dot1x-mka-1/3/2)# show dot1x-mka config-group test1

mka-cfg-group test1
  key-server-priority 5
  macsec cipher-suite gcm-aes-128 integrity-only
  macsec confidentiality-offset 30
  macsec frame-validation check
        macsec replay-protection strict
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

show dot1x-mka sessions

Displays a summary of all MACsec Key Agreement (MKA) sessions on the device.

Syntax

show dot1x-mka sessionsbrief

show dot1x-mka sessionsethernet*device/slot/port*

Parameters

brief

Displays a brief status of all MKA sessions.

ethernet*device/slot/port*

Displays MKA sessions that are active on a specified Ethernet interface. The Ethernet interface is specified by device position in stack, slot on the device, and interface on the slot.

Modes

User EXEC mode

Command Output

The **show dot1x-mka sessions** command with the **brief** option displays the following information:

Output field	Description
Port	Designates the interface for which MACsec information is listed (by device, slot, and port).
Link-Status	Indicates whether the link is up or down.
MKA-Status	Indicates whether a secure channel has been established.
Key-Server	Indicates whether the interface is operating as a key-server.
Negotiated Capability	Indicates MACsec parameters configured on the designated interface.

The **show dot1x-mka sessions** command with the **ethernet** interface options displays the following information:

Output field	Description
Interface	The information that follows applies to the designated interface.
MKA cfg group Name	The designated MKA configuration group has been applied to the designated interface.
DOT1X-MKA Enabled (Yes, No)	Indicates whether MACsec is enabled for the designated interface.
DOT1X-MKA Active (Yes, No)	Indicates whether MACsec is active on the interface.
Key Server (Yes, No)	Indicates whether the MACsec key-server is active over the interface.
Configuration Status:	The following fields describe the MKA configuration applied to the interface.
Enabled (Yes, No)	Indicates whether MACsec is currently enabled.
Capability (Integrity and or confidentiality)	Indicates whether ICV checks are being performed on MACsec frames and whether encryption is being applied.
Desired (Yes, No)	Indicates whether port is interested in becoming the key-server.

Output field	Description
Protection (Yes, No)	Indicates whether replay protection is applied to the interface.
Frame Validation (Yes, No)	Indicates whether frames received are being checked for valid MACsec headers.
Replay Protection (Strict, Out of Order)	Indicates that replay protection is configured and whether frames must be received in exact order or within an allowable window.
Replay Protection Size	Indicates the allowable window size within which frames may be received.
Cipher Suite (GCM-AES-128)	Specifies the cipher suite used for ICV checking, encryption, and decryption.
Key Server Priority (1 to 127)	Specifies the key-server priority configured on the interface.
Secure Channel Information	The following fields describe a secure channel established on this interface.
Local SCI	Provides the hexadecimal value of the Secure Channel Identifier for this channel.
Member Identifier	Provides the MACsec number assigned to the MKA peer.
Message Number	Provides the Message Number contained in Hello packets from this MKA peer. Hello packets are exchanged to determine peer status, MACsec capabilities, and SAK Key Identifier.
Latest SAK Status (RX and or TX)	Indicates the Secure Association Key (SAK) state.
Latest SAK AN	Provides the Association Number for the most recently active Secure Association Key.
Latest SAK KI	Provides the Key Identifier for the most recently active Secure Association Key.
Negotiated Capability (Integrity and or Confidentiality with offset)	Indicates whether ICV checking, encryption, and a confidentiality offset have been applied on the secure channel. (The negotiated capability may differ from parameters configured on the interface when it does not have key-server status.)
Peer Information:	The output fields that follow provide information on actual and potential MACsec peer interfaces.
State (Live or Potential)	Indicates whether the peer is considered a live peer or a potential peer for MKA protocol.
Member Identifier	Designates the peer by its Member Identifier, a hexadecimal value.
Message Number	Provides the Message Number that appears in Hello packets from the designated peer interface as a hexadecimal value.
SCI	Provides the peer's Secure Channel Identifier.
Priority	Provides the key-server priority configured on the peer interface.

Examples

In the following example, all enabled MKA interfaces on the device are listed, along with configured parameters and current status.

```
device(config-dot1x-mka-1/3/2)# show dot1x-mka sessions brief

Port    Link-Status  MKA-Status  Key-Server  Negotiated Capability

1/3/2   Down         Pending     ---         ---
1/3/3   Up           Secured     No          Integrity, Confidentiality with Off. 30
1/3/4   Up           Secured     No          Integrity, Confidentiality with Off. 30
```

The following example lists MKA sessions that are active on Ethernet interface 1/3/3 (device 1, slot 3, port 3), with configuration details for each active interface.

```
device(config-dot1x-mka-1/3/3)# show dot1x-mka sessions ethernet 1/3/3

Interface                : 1/3/3

  MACsec Status          : Secured
  DOT1X-MKA Enabled      : Yes
  DOT1X-MKA Active       : Yes
  Key Server             : No

Configuration Status:
  Enabled                : Yes
  Capability             :  Integrity,  Confidentiality
  Desired                : Yes
  Protection             : Yes
  Frame Validation       : Disable
  Replay Protection      : Strict
  Replay Protection Size  : 0
  Cipher Suite           : GCM-AES-128
  Key Server Priority    : 20

  Local SCI              : 748ef8344a510082
  Member Identifier      : 802ed0536fcafc43407ba222
  Message Number         : 8612

Secure Channel Information:
  Latest SAK Status      : Rx & Tx
  Latest SAK AN          : 0
  Latest KI              : d08483062aa9457e7c2470e300000001
  Negotiated Capability  : Integrity, Confidentiality with offset 30

Peer Information:
State        Member Identifier          Message Number    SCI                Priority
-----        -----------------          --------------    ----------------   --------
Live         d08483062aa9457e7c2470e3             8527    748ef83443910082         20
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

show dot1x-mka statistics

Displays current MACsec Key Agreement (MKA) statistics on the interface.

Syntax

show dot1x-mka statisticsethernet*unit/slot/port*

Parameters

ethernet*unit/slot/port*

Ethernet interface for which MKA statistics are to be displayed. The unit number is 1 for a standalone unit or the stack ID for a stack member.

Modes

User EXEC configuration mode

Usage Guidelines

It is recommended that you use the **clear dot1x-mka statistics** command to clear results of the previous **show dot1x-mka statistics** command before re-executing it.

Command Output

The **show dot1x-mka statistics** command displays the following information:

Output field	Description
Interface (device/slot/port)	The output fields describe MACsec activity for the designated interface.
MKA in Pkts	MKA protocol packets received
MKA in SAK Pkts	MKA protocol packets received containing a SAK
MKA in Bad Pkts	MKA protocol packets received that are bad
MKA in Bad ICV Pkts	MKA protocol packets received with a bad ICV
MKA in Mismatch Pkts	MKA protocol packets received with mismatched CAK
MKA out Pkts	MKA protocol packets transmitted
MKA out SAK Pkts	MKA protocol packets transmitted containing a SAK
Number of SAK	Total number of SAKs received

Examples

The following example shows MKA statistics for Ethernet interface 1/3/3 (device 1, slot 3, port 3), which is transmitting and receiving MACsec frames.

```
device(config-dot1x-mka-1/3/3)# clear dot1x-mka statistics ethernet 1/3/3
device(config-dot1x-mka-1/3/3)# show dot1x-mka statistics ethernet 1/3/3

Interface                : 1/3/3

MKA in Pkts              : 8585
MKA in SAK Pkts          : 1
MKA in Bad Pkts          : 0
MKA in Bad ICV Pkts      : 0
MKA in Mismatch Pkts     : 0
MKA out Pkts             : 8687
MKA out SAK Pkts         : 0
Number of SAK            : 1
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	Support for this command was added on ICX 7650 devices.
08.0.90	Support for this command was added on ICX 7850 devices.

show eee-statistics

Displays the global energy efficient statistics.

Syntax

show eee-statistics

Modes

Global configuration mode

Usage Guidelines

For ICX 7550 devices, whenever the speed is changed on a EEE-enabled multi-gigabit port, the **clear eee-statistics** command must be executed before displaying EEE statistics using the **show eee-statistics** command.

For ICX 7550 devices, on an EEE-enabled port, when the speed is changed from 2.5G to 1G or from 10G to 1G, you must use the **clear eee-statistics** command before displaying the global energy efficient statistics using the **show eee-statistics** command.

Command Output

The **show eee-statistics** command displays the following information:

Output field	Description
Port	The port number.
EEE-State	Displays if Energy Efficient Ethernet is enabled or disabled. If disabled then all the counters will be 0. If EEE is enabled, then these counters will be updated.
TXEventCount	TX EEE Low Power Idle (LPI) event counter. This counter specifies the number of times the LPI mode has been enforced by EEE on Transmit side.
TXDuration	TX EEE LPI duration counter. This is an LPI event duration counter on the transmit path which gets updated if the port is in LPI mode.
RXEventCount	RX EEE LPI event counter. This counter specifies the number of times the LPI mode has been enforced by EEE on the receive side.
RXDuration	RX EEE LPI duration counter. This is an LPI event duration counter on the receive path which gets updated if the port is in LPI mode.

Examples

The following example displays Energy Efficient Ethernet globally.

```
device# show eee-statistics
Port        EEE-State  TXEventCount       TXDuration        RXEventCount                RXDuration
1/1/1       Enable       0                    0                 0                          0
1/1/2       Enable       0                    0                 0                          0
1/1/3       Enable       17                 2551234             16                       2561886
1/1/4       Enable       17                 2545628             16                       50953524
1/1/5       Enable       2                  2550749             2                        50952549
1/1/6       Enable       1                  2543935             1                        2551760
1/1/7       Enable       17                 2549030             17                       2550750
1/1/8       Enable       2                  419455              16                       50952710
1/1/9       Enable       1                  424565              1                        50950470
1/1/10      Enable       17                 2549030             1                        2549101
1/1/11      Enable       2                  419455              2                        424563
1/1/12      Enable       1                  424565              10                       50945833
1/1/13      Enable       2                  1526709             10                       1532337
1/1/14      Enable       10                 1531808             2                        2561886
1/1/15      Enable       10                 1531391             2                        1531834
1/1/16      Enable       2                  1526292             10                       50945548
1/1/17      Enable       2                  1542560             10                       50957135
1/1/18      Enable       10                 1537443             2                        1542565
1/1/19      Enable       10                 1528600             2                        1533722
1/1/20      Enable       2                 1533717              10                       50948350
1/1/21      Enable       2                 1533203              10                       50947920
1/1/22      Enable       10                 1528087             2                        1533230
1/1/23      Enable       10                 1527677             2                        1532799
1/1/24      Enable       2                 1532794              10                       50947596
```

History

Release version	Command history
08.0.30	This command was introduced.

show eee-statistics ethernet

Displays the Energy Efficient Ethernet statistics on a specific interface.

Syntax

show eee-statistics ethernet*stackid/slot/port*

Modes

Global configuration mode

Usage Guidelines

Use this command to display the energy efficient statistics for a slot or interface.

Note that for the ICX 7550, whenever the speed is changed on a EEE-enabled multi-gigabit port, the **clear eee-statistics** command must be executed before displaying EEE statistics using the **show eee-statistics ethernet** command.

Command Output

The **show eee-statistics ethernet** command displays the following information:

Output field	Description
Port	The port number.
EEE-State	Displays if Energy Efficient Ethernet is enabled or disabled. If disabled then all the counters will be 0. If EEE is enabled, then these counters will be updated.
TXEventCount	TX EEE Low Power Idle (LPI) event counter. This counter specifies the number of times the LPI mode has been enforced by EEE on Transmit side.
TXDuration	The total time from the first LPI (Low Power Idle) signal transmission. This is an LPI event duration counter on the transmit path which gets updated if the port is in LPI mode.
RXEventCount	The LPI signal reception count. This counter specifies the number of times the LPI mode has been enforced by EEE on the receive side.
RXDuration	Total time from the first LPI signal reception. This is an LPI event duration counter on the receive path which gets updated if the port is in LPI mode.

Examples

The following example displays energy efficient statistics on a specific interface.

```
device(config)# show eee-statistics ethernet 1/1/4

Port      EEE-State       TXEventCount       TXDuration        RXEventCount        RXDuration
1/1/4      Enable           17                 2545628           16                  50953524
```

History

Release version	Command history
08.0.30	This command was introduced.

show errdisable

Displays information about errdisabled ports.

Syntax

show errdisable { **recovery** | **summary** }

Parameters

recovery

Displays all the default error disable recovery states for all possible conditions.

summary

Displays the port number along with the reason why the port is in an errdisable state and the method used to recover the port.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

VLAN configuration mode

Examples

The following example shows the errdisable recovery information.

```
device# show errdisable recovery
ErrDisable Reason                                                    Timer Status
-------------------------------------------------------------------------------
all reason                                                           Enabled
bpduguard                                                            Enabled
loopDetection                                                        Enabled
invalid license                                                      Disabled
packet-inerror                                                       Enabled
Reload the switch or stack to enable this port in 10G speed          Disabled
stack-port-resiliency                                                Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
                                                                     Disabled
loam-critical-event                                                  Disabled
                                                                     Disabled
                                                                     Disabled

Timeout Value: 300 seconds
PoD Timeout Value: 30 seconds

Interface that will be enabled at the next timeout:

Interface         Errdisable reason   Time left (sec)

--------------    -----------------   ---------------
```

The following example shows the errdisable summary information. In this example, port 6 is errdisabled for a BPDU guard violation.

```
device# show errdisable summary
Port 6 ERR_DiSABLED for bpduguard
```

show erspan

Displays the ERSPAN profiles.

Syntax

show erspan [**profile** *profile-number*]

Parameters

profile

Specifies the profile number to display.

profile-number

Specifies the profile number. Valid values are from 1 through 4.

Modes

Global configuration mode

Command Output

The **show erspan** command displays the following information:

Output field	Description
Profile	The profile number.
Type	The type of profile (ERSPAN).
Mirror destination	Indicates whether the mirror destination is reachable or unreachable.
Destination IP	The IP address of the destination host.
Destination MAC	The MAC address of the destination host.
Source IP	The IP address of the source router.
Source MAC	The MAC address of the source router.
Ports monitored	The ports that are being monitored.
HW destination id for each device	The hardware destination ID for each device being monitored. The ID is in the form stack_id/ device:dest_id.

Examples

The following example displays all of the ERSPAN profiles. In this example, ERSPAN mirroring has been enabled for profile 1, but has not yet been enabled for profile 2.

```
device(config)# show erspan

 Profile 1
 Type            ERSPAN
 Mirror destination Not reachable.
 Destination IP   1.1.1.1
 Destination MAC  0000.5e00.5300
 Source IP        2.2.2.2
 Source MAC       0000.5300.5312
 Outgoing port    INVALID
 Ports monitored:
  Input monitoring      : (U1/M1)   1
  Output monitoring     : (U1/M1)   1
 HW destination id for each device:
 stack_id/device:dest_id

 Profile 2
 Type            ERSPAN
 Mirror destination Not reachable.
 Destination IP   3.3.3.3
 Destination MAC  0000.5e00.5300
 Source IP        2.2.2.2
 Source MAC       0000.5300.5312
 Ports monitored:
 HW destination id for each device:
 stack_id/device:dest_id
```

History

Release version	Command history
08.0.40	This command was introduced.

show ethernet loopback interfaces

Displays the status and details of each Ethernet loopback-enabled port and the associated VLANs.

Syntax

show ethernet loopback interfaces [**brief** | **ethernet** *stackid/slot/port* | **lag** *lag-id* | **vlan** *vlan-id*]

Parameters

brief

Displays the Ethernet loopback information in brief mode.

ethernet *stackid/slot/port*

Displays the status and details of the specified port.

lag *lag-id*

Displays the status and details for the specified LAG.

vlan

Displays the status and details of a VLAN.

vlan-id

Specifies the VLAN ID.

Modes

Privileged EXEC mode

Global configuration mode

VLAN configuration mode

Command Output

The **show ethernet loopback interfaces** command displays the following information:

Output field	Description
Interface Type	Type of interface (VLAN-aware or VLAN-unaware)
Interface Port	Interface ID (Stackid/Slot/Port)
Interface Mode	Flow classification mode (Flow-aware or Flow-unaware)
Flow Mode DA/SA	Destination and Source MAC address of the flow

Examples

The following example shows the output of the **show ethernet loopback interfaces** command.

```
device(config-vlan-10)# show ethernet loopback interfaces

ETHERNET LOOPBACK INTERFACE [1/1/11] (In Service)
Interface Type  : PORT
Interface Port  : 1/1/11
Interface Mode  : FLOW-UNAWARE
Flow Mode DA/SA : ANY/ANY
```

The following example shows the output of the **show ethernet loopback interfaces brief** command.

```
device(config-vlan-10)# show ethernet loopback interfaces brief
PORT         TYPE  VLANS  STATUS  OP-MODE      D-MAC          S-MAC
==========|======|=====|========|=======|==============|==============
1/1/11     |  PORT|     0|    ACTV|FLOW-U |            ANY|            ANY
1/1/12     |  VLAN|     1|    ACTV|FLOW-A |1111.2222.3333|4444.5555.5555
```

The following example shows the output of the **show ethernet loopback interfaces ethernet** command.

```
device(config-vlan-10)# show ethernet loopback interfaces ethernet 1/1/1
ETHERNET LOOPBACK INTERFACE [1/1/1] (In Service)
Interface Type  : PORT
Interface Port  : 1/1/1
Interface Mode  : FLOW-UNAWARE
Flow Mode DA/SA : ANY/ANY
```

History

Release version	Command history
08.0.30	This command was introduced.
09.0.00	This command was modified to remove the **port** ID option and replace it with the **ethernet** *stackid/slot/port* and the **lag** *lag-id* option.

show ethernet loopback resources

Displays the available resources and the resources that are used by loopback testing.

Syntax

show ethernet loopback resources

Modes

Privileged EXEC mode

Global configuration mode

VLAN configuration mode

Command Output

The **show ethernet loopback resources** command displays the following information:

Output field	Description
Interface Resource	Maximum number of ports that can be enabled with Ethernet loopback.
H/W Pool Resource	Maximum hardware resource for loopback.

Examples

The following example shows the output of the **show ethernet loopback resources** command.

```
device(config)# show ethernet loopback resources
Ethernet Loopback Resource:
     RESOURCE NAME       MAX      USED    AVAILABLE
======================|========|========|===========
     Interface Resource|     20|       0|      20
     H/W Pool Resource|      40|       0|      40
```

History

Release version	Command history
08.0.30	This command was introduced.

show fdp entry

Displays detailed Foundry Discovery Protocol (FDP) and Cisco Discovery Protocol (CDP) information for all neighbor devices or for a specific device.

Syntax

show fdp entry{* | *device-id*}

Parameters

*

Displays detailed FDP updates for all neighbor devices.

device-id

Specifies the device ID of the FDP neighbor entry for which the update information is to be displayed. The value is an ASCII string.

Modes

User EXEC mode

Command Output

The **show fdp entry** command displays the following information.

Output field	Description
Device ID	The host name of the neighbor. In addition, this field lists the VLAN memberships and other VLAN information for the neighbor port that sent the update to this device.
Entry address(es)	The Layer 3 protocol addresses configured on the neighbor port that sent the update to this device. If the neighbor is a Layer 2 switch, this field lists the management IP address.
Platform	The product platform of the neighbor.
Interface	The interface on which this device received the FDP or CDP update from the neighbor.
Port ID	The interface through which the neighbor sent the update.
Holdtime	The maximum number of seconds that this device can keep the information received in the update before discarding it.
Version	The software version running on the neighbor.

show fdp interface

Displays Foundry Discovery Protocol (FDP) information for an interface.

Syntax

show fdp interface [**ethernet** *stack-id/slot/port*]

Parameters

ethernet *stack-id/slot/port*

Displays the FDP information for the specified Ethernet port ID.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show fdp interface** command displays the following information.

Output field	Description
Holdtime	The maximum number of seconds that this device keeps the information received in the update before discarding it.

Examples

The following example shows FDP information for Ethernet port 1/2/3.

```
device# show fdp interface ethernet 1/2/3

FastEthernet1/2/3 is up, line protocol is up
Encapsulation ethernet
Sending FDP packets every 5 seconds
Holdtime is 180 seconds
```

show fdp neighbors

Displays the Cisco neighbors about which the Ruckus ICX device has learned from Cisco Discovery Protocol (CDP) packets.

Syntax

show fdp neighbors [**detail** | **ethernet** *stack-id/slot/port*]

Parameters

detail

Displays detailed information for the Cisco neighbors.

ethernet *stack-id/slot/port*

Specifies the Ethernet port ID for which the information is to be displayed.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show fdp neighbors** command.

```
device# show fdp neighbors detail

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater
(*) indicates a Cisco device
Device ID      Local Int    Holdtm   Capability  Platform     Port ID
-------------- ------------ ------   ----------  -----------  -------------
(*)Router      Eth 1/1/1      124      R          cisco RSP4   FastEthernet5/0/0
```

The following is sample output from the **show fdp neighbors detail** command.

```
device# show fdp neighbors detail

Device ID: Router
Entry address(es):
            IP address: 10.95.6.143
Platform: cisco RSP4, Capabilities: Router
Interface: Eth 1/1/1, Port ID (outgoing port): FastEthernet5/0/0
Holdtime : 150 seconds
Version :
Cisco Internetwork Operating System Software
IOS (tm) RSP Software (RSP-JSV-M), Version 12.0(5)T1, RELEASE SOFTWARE
(fc1)
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Thu 19-Aug-99 04:12 by xxxxxx
```

The following is sample output from the **show fdp neighbors ethernet** command.

```
device# show fdp neighbors ethernet 1/1/5

Device ID: Router
Entry address(es):
IP address: 10.95.6.143
Platform: cisco RSP4, Capabilities: Router
Interface: Eth 1/1/5, Port ID (outgoing port): FastEthernet5/0/0
Holdtime : 127 seconds
Version :
Cisco Internetwork Operating System Software
IOS (tm) RSP Software (RSP-JSV-M), Version 12.0(5)T1, RELEASE SOFTWARE
(fc1)
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Thu 19-Aug-99 04:12 by xxxxxx
```

show fdp traffic

Displays packet statistics for Foundry Discovery Protocol (FDP) and Cisco Discovery Protocol (CDP).

Syntax

show fdp traffic

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show fdp traffic** command.

```
device# show fdp traffic

CDP/FDP counters:
Total packets output: 6, Input: 3
Hdr syntax: 0, Chksum error: 0, Encaps failed: 0
No memory: 0, Invalid packet: 0, Fragmented: 0
Internal errors: 0
```

show files

Displays the list of files stored in flash memory.

Syntax

show files [*dir-name*]

Parameters

dir-name

Specifies the name of a directory.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show files** command.

```
device# show files

Type    Size        Name
-----------------------
F         28203908     primary
F         27949956     secondary
F         641         startup-config.txt
F         391         stacking.boot
F         76942         debug.boot
F         638         startup-config.backup
F         0             startup-config.no

        56232476 bytes 7 File(s) in FI root

        1771020288 bytes free in FI root
        1771020288 bytes free in /
```

show file-manager details

Displays details of the registrations handled by different applications and current ongoing operations.

Syntax

show file-manager details

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example shows sample output from the **show file-manager details** command.

```
device#show file-manager details
Filemanager Stack Info
----------------------
Stack Role: Master
Unit id: 1
Standby id: 8

FileMgr ITC Stats
-----------------
Transfer Requests        : 31
Total responses          : 31
Successful Responses     : 31
Partial Responses        : 0
Null Response            : 0
Transfers in Progress    : 0
Request Bytes            : 62518
Response Bytes           : 43115

FileMgr Db Info
---------------
Filename: /icx_dhcp_snoop.db
Trigger:  RELOAD
Trigger Action:  BACKUP
Filename: /var/run/filemgr.info
Trigger:  PERIODIC
Trigger Action:  SYNC TO STANDBY
Filename: /icx_dhcpv6_snoop.db
Trigger:  RELOAD
Trigger Action:  BACKUP
```

History

Release version	Command history
08.0.95	This command was introduced.

show files disk0

Displays the contents of the USB flash drive.

Syntax

show files disk0

Modes

Enable mode

Usage Guidelines

Insert the flash drive in the device and enter the **show files disk0** command to display the contents of the USB flash drive.

Examples

The following example displays the contents of the USB flash drive.

```
device# show files disk0
F             681 20140611132829945ICX7650-PREM-LIC-SW.XML
F        28483780 SPS08030q066.bin
F             391 stacking.boot
F               0 sil_logs
F        28483780 pri.bin
F             391 stacking.boot1111
F            2160 running-configsp2
F            2162 startup-config.sp2
F            2160 run1
F            5344 core-file
```

History

Release version	Command history
08.0.30	This command was introduced.

show flash

Displays flash memory contents on the device.

Syntax

show flash [**unit** *unit-num*]

Parameters

unit *unit-num*

Displays flash memory contents for the specified stack unit.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

Use this command to view the flash and boot images installed on the device. Beginning with 08.0.90, there will be primary and secondary partitions for the boot image.

Command Output

The **show flash** command displays the following information.

Output field	Description
Compressed Pri Code size	The flash code size installed in the primary flash area.
Compressed Sec Code size	The flash code size installed in the secondary flash area.
Compressed Pri Boot Code size	The boot code size installed in the primary area.
Compressed Sec Boot Code size	The boot code size installed in the secondary area.

Examples

The following is sample output from the **show flash** command.

```
device# show flash
Stack unit 1:
Compressed Pri Code size = 32554116, Version:08.0.90dT213 (SPR08090dev.bin)
Compressed Sec Code size = 32555588, Version:08.0.90dT213 (SPR08090dev.bin)
Compressed Pri Boot Code size = 786944, Version:10.1.14T225 (spz10114dev)
Compressed Sec Boot Code size = 786944, Version:10.1.14T225 (spz10114pvt)
Code Flash Free Space = 1174953984
```

show flexlink

Displays Flexlink configuration details.

Syntax

show flexlink [**all** | **interface** { **ethernet** *unit/slot/port* | **lag** *lag-id* }] [**detail**]

Parameters

all

Displays all Flexlink instances configured on the device.

interface ethernet *unit/slot/port*

Displays information about the specific Ethernet interface configured as a Flexlink interface.

interface lag *lag-id*

Displays information about the specific LAG interface configured as a Flexlink interface.

detail

Displays detailed information about all Flexlink instances or a specific Flexlink interface.

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

LAG interface configuration mode

Command Output

The **show flexlink** command displays the following information:

Output field	Description
Active Interface	The interface configured as the active link in the Flexlink instance.
Backup Interface	The interface configured as the backup link in the Flexlink instance.
State	The link status of the active and backup links.
Preemption Mode	The configured preemption mode, based on which the preferred interface for forwarding traffic is determined.
Preemption delay	The amount of time an interface waits before preempting the other link.
Bandwidth	The bandwidth of the Flexlink interfaces.

Examples

The following example displays brief information about all Flexlink instances configured on the device.

```
device(config)# show flexlink all
    Active Interface        Backup Interface        State
    ------------------------------------------------------------
    ethernet 1/1/9            ethernet 1/1/10       Active Up/Backup FL-Backup

    lag 10                    lag 11                Active Up/Backup FL-Backup
```

The following example displays detailed information about all Flexlink instances configured on the device..

```
device(config)# show flexlink all detail
    Active Interface        Backup Interface        State
    ------------------------------------------------------------
    ethernet 1/1/9         ethernet 1/1/10          Active Up/Backup FL-Backup
    Preemption Mode: Off
    Preemption delay: 0
    Bandwidth : 1/1/9 (1Gbit), 1/1/10 (1Gbit)

    lag 10              lag 11                      Active Up/Backup FL-Backup
    Preemption Mode: Off
    Preemption delay: 0
    Bandwidth : lg10 (20G), lg11 (10G)
```

The following example displays brief information about a specific Flexlink interface (physical interface).

```
device(config)# show flexlink interface ethernet 1/1/9
    Active Interface        Backup Interface        State
    ------------------------------------------------------------
    ethernet 1/1/9         ethernet 1/1/10          Active Up/Backup FL-Backup
```

The following example displays detailed information about a specific Flexlink interface (physical interface).

```
device(config)# show flexlink interface ethernet 1/1/9 detail
    Active Interface        Backup Interface        State
    ------------------------------------------------------------
    ethernet 1/1/9         ethernet 1/1/10             Active Up/Backup FL-Backup
    Preemption Mode: Off
    Preemption delay: 0
    Bandwidth : 1/1/9 (1Gbit), 1/1/10 (1Gbit)
```

The following example displays brief information about a specific Flexlink interface (LAG interface).

```
device(config)# show flexlink interface lag 10
    Active Interface        Backup Interface        State
    ------------------------------------------------------------
    lag 10                  lag 11                Active Up/Backup FL-Backup
```

The following example displays detailed information about a specific Flexlink interface (LAG interface).

```
device(config)# show flexlink interface lag 10 detail
    Active Interface        Backup Interface        State
    ------------------------------------------------------------
    lag 10              lag 11                Active Up/Backup FL-Backup
    Preemption Mode: Off
    Preemption delay: 0
    Bandwidth : lg10 (20G), lg11 (10G)
```

History

Release version	Command history
09.0.00	This command was introduced.

show forwarding-profile

Displays information about the configured forwarding profile.

Syntax

show forwarding-profile { **config** | **details** }

Parameters

config

Specifies information about the configured forwarding profile.

details

Specifies detailed information about the predefined forwarding profiles.

Modes

User EXEC mode

Usage Guidelines

This command is supported for ICX 7850 and ICX 7550 devices only.

Examples

The following example shows information about the configured forwarding profile for an ICX 7850 device. Because a specified forwarding profile has not been configured, the default forwarding profile is used.

```
ICX7850> show forwarding-profile config

No profile has been configured. The default profile profile1 is being used
Parameter-name                  profile1
mac                               32768
ip-route                         307200
ip6-route                         11264
igmp-snoop-mcache                  6144
igmp-snoop-group-add               8192
mld-snoop-mcache                   6144
mld-snoop-group-addr               8192
pim-hw-mcache                      6144
pim6-hw-mcache                     2048
hw-ip-next-hop                    62464
```

The following example shows detailed information about the predefined forwarding profiles for an ICX 7850 device.

```
ICX7850> show forwarding-profile details

Parameter-name               profile1       profile2       profile3       profile4
mac                             32768         294912          56320         163840
ip-route                       307200          16384          43008         131072
ip6-route                       11264           4096          35840          11264
igmp-snoop-mcache                6144           6144           6144           6144
igmp-snoop-group-addr            8192           8192           8192           8192
mld-snoop-mcache                 6144           6144           6144           6144
mld-snoop-group-addr             8192           8192           8192           8192
pim-hw-mcache                    6144           6144           8192           6144
pim6-hw-mcache                   2048           2048           8192           2048
hw-ip-next-hop                  62464          47104          57344          40960
Default                           YES             NO             NO             NO
When uRPF feature is enabled, above IPv4 and IPv6 routes scale numbers will become half
URPF:Disabled
```

The following example shows information about the configured default forwarding profile because a non-default forwarding profile has not been configured for an ICX 7550 device.

```
ICX7550> show forwarding-profile config

Currently configured and in-use profile is profile2
Parameter-name                  profile2
mac                               114688
ip-route                            8192
ip6-route                           2048
igmp-snoop-mcache                   6144
igmp-snoop-group-add                6144
mld-snoop-mcache                    8192
mld-snoop-group-addr                8192
pim-hw-mcache                       6144
pim6-hw-mcache                      2048
hw-ip-next-hop                     21504
```

The following example shows detailed information about the predefined forwarding profiles for an ICX 7550 device.

```
ICX7550> show forwarding-profile details

Parameter-name               profile1       profile2       profile3
mac                             16384         114688          32768
ip-route                        97280           8192          21504
ip6-route                        8192           2048          17408
igmp-snoop-mcache                6144           6144           6144
igmp-snoop-group-addr            6144           6144           6144
mld-snoop-mcache                 8192           8192           8192
mld-snoop-group-addr             8192           8192           8192
pim-hw-mcache                    6144           6144           6144
pim6-hw-mcache                   2048           2048           2048
hw-ip-next-hop                  21504          21504          21504
Default                           YES             NO             NO
```

History

Release version	Command history
08.0.90	This command was introduced for ICX 7850 devices.
08.0.95	Support was added for ICX 7550 devices. For ICX 7850 devices, output was added for “Profile3” and “Profile4”.

show hardware ipv6-route

Displays the hardware information for Layer 3 IPv6 hardware routes.

Syntax

show hardware ipv6-route{*ipv6-address*|*ipv6-addressprefix*|**device***device-id*|**vrf***vrf-name*[**status**]|**status**}

Parameters

ipv6-address
Specifies an IPv6 address.

ipv6-addressprefix
Specifies an IPv6 network number.

device*device-id*
Specifies the hardware device number.

vrf*vrf-name*
Specifies a VRF instance.

status
Displays the status of the IPv6 routes.

Modes

User EXEC mode

Usage Guidelines

If the configured VRF name is more than 20 characters (maximum is 256), the first 20 characters appended with '*' is displayed.

Examples

The following example displays the status of the IPv6 hardware routes.

```
device> show hardware ipv6-route status

VRF    Max-Routes    IPv6-HW-Routes-Added    IPv6-Route-Addn-Fails
=================================================================
0         3000               2                  0
1            2               2                  0
2           70              70                  0
```

The following example displays the status of the IPv6 hardware routes for a specific VRF.

```
device> show hardware ipv6-route vrf 1 status

VRF    Max-Routes    IPv6-HW-Routes-Added    IPv6-Route-Addn-Fails
=================================================================
1            2               2                  0
```

The following example displays sample output from the **show hardware ipv6-route** command.

```
device> show hardware ipv6-route device 0

Total number of IPv6 hardware routes(dev:0): 6 (default:2, host:2, ip6_65-128:2)
vr: 0 fe80::/16 NH: 1024 NH hw: 101024 cmd: TRAP, Outgoing vlan: 0, L3 intf: 511 RouteHit: No
vr: 0 ::/0 NH: 1025 NH hw: 101025 cmd: DROP, Outgoing vlan: 4091, L3 intf: 510 RouteHit: No
--------------------    Host Route    ----------------------------
vr: 0 2009::1/128 NH: 1024 NH hw: 101024 cmd: TRAP, Outgoing vlan: 0, L3 intf: 511 RouteHit: No
vr: 0 2012::1/128 NH: 1024 NH hw: 101024 cmd: TRAP, Outgoing vlan: 0, L3 intf: 511 RouteHit: No
--------------------    IPv6 65-128 pfxlen    --------------------
vr: 0 2012::/96 NH: 1024 NH hw: 101024 cmd: TRAP, Outgoing vlan: 0, L3 intf: 511 RouteHit: No,
(pkt_count=0, devId/pcl=0/75, 1/88)
vr: 0 2009::/112 NH: 1024 NH hw: 101024 cmd: TRAP, Outgoing vlan: 0, L3 intf: 511 RouteHit: No,
(pkt_count=0, devId/pcl=0/76, 1/89)
```

History

Release	Command History
08.0.95	This command was modified to display the status of the IPv6 hardware routes.

show hardware mac-entry

Displays the hardware information for a specified MAC address or device.

Syntax

show hardware mac-entry [**device** *device_id* | *mac_address*]

Parameters

device *device_id*

Specifies the hardware device number.

mac_address

Specifies a MAC address to be displayed.

Modes

User EXEC mode

Examples

The following example shows command output for hardware device 0. The MAC address and VLAN ID of the device are displayed.

```
device# show hardware mac-entry device 0

Total number of entries will be printed at the end of the prints
mac=00e0.5200.0000 vlan=4094 modid=0 port=0 Static COS(src=7,dst=7) CPU Group=(BCM_L2_XXX: 0x4020)
Total number of FDB entries displayed:1
```

History

Release	Command History
08.0.00a	This command was introduced.

show hardware nexthop usage

Displays a summary of the Layer 3 unicast hardware next-hop usage.

Syntax

show hardware nexthop usage

Modes

User EXEC mode

Usage Guidelines

This command displays the total, available, and used unicast next-hop entries programmed in hardware for a specific unit in a stack. The next-hop usage summary includes unicast IPv4 and unicast IPv6 entries.

Examples

The following example displays the hardware next-hop usage entries including Openflow next-hop usage.

```
device> show hardware nexthop usage

Stack Unit : 1
l3 unicast nexthop and openflow entries :
================================
total = 14336
available = 13336
unicast used = 1000
openflow used = 0
```

History

Release version	Command history
08.0.70	This command was introduced.
08.0.95	The command output was updated to include Openflow next-hop usage information.

show hardware route

Displays the hardware information for Layer 3 IPv4 hardware routes.

Syntax

show hardware route{*ip-address*|*ip-addressprefix*|**device***device-id*|**vrf***vrf-name*[**status**]|**status**}

Parameters

ip-address

Specifies an IPv4 address.

ip-addressprefix

Specifies an IPv4 network number.

device*device-id*

Specifies the hardware device number.

vrf*vrf-name*

Specifies a VRF instance.

status

Displays the status of the IPv4 routes.

Modes

User EXEC mode

Examples

The following example displays the status of the IPv4 hardware routes.

```
device> show hardware route status

VRF    Max-Routes    IPv4-HW-Routes-Added    IPv4-Route-Addn-Fails
=================================================================
0        10000                5                   0
1          250              249                   0
2            1                1                   0
```

The following example displays the status of the IPv4 hardware routes for a specific VRF.

```
device> show hardware route vrf 1 status

VRF    Max-Routes    IPv4-HW-Routes-Added    IPv4-Route-Addn-Fails
=================================================================
1          250              249                   0
```

The following example displays sample output for the **show hardware route** command.

```
device> show hardware route device 0

Total number of hardware routes: 20   Device-id:0
Ports in this devices are  25 to 48
vr: 0         30.1.1.2/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       18.18.18.1/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0         20.1.1.1/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       70.70.70.1/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0          8.8.8.1/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       80.80.80.1/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0    170.170.170.2/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0    180.180.180.2/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       23.23.23.2/32 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       10.37.82.0/25 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0         30.1.1.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       18.18.18.0/24 NH: 2051 NH hw: 102051 cmd: FWD, Outgoing vlan: 4092, port: INVALID,mac:
0200.8801.002a, L3 intf: 5420 RouteHit: No
vr: 0         20.1.1.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       70.70.70.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0          8.8.8.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       80.80.80.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0    170.170.170.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0    180.180.180.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0       23.23.23.0/24 NH: 2048 NH hw: 102048 cmd: TRAP, Outgoing vlan: 0, L3 intf: 8191 RouteHit: No
vr: 0          0.0.0.0/0 NH: 2049 NH hw: 102049 cmd: DROP, Outgoing vlan: 4091, L3 intf: 4091 RouteHit:
No
```

History

Release	Command History
08.0.95	This command was modified to display the status of the IPv4 hardware routes.

show ikev2

Displays global Internet Key Exchange version 2 (IKEv2) configuration information.

Syntax

show ikev2

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

Command Output

The **show ikev2** command displays the following information:

Output field	Description
Retry Count	The maximum number of attempts that are permitted to retransmit a message. The range is from 1 through 25. The default value is 5.
Max Exchange Time	The maximum setup time (in seconds) for an exchange. The range is from 0 through 300. The default value is 30 seconds.
Retransmit Interval	The length of time (in seconds) that an IKEv2 task waits before attempting to resend a packet. The range is from 1 through 60. The default value is 5 seconds. The interval between each resend attempt is increased by the value of the retransmit interval; that is, the retransmit interval increases exponentially.
Max SA	The maximum number of IKEv2 SAs that may be on a node. The range is from 1 through 256. The default value is 256.
Max SA In Nego	The maximum number of IKEv2 security associations (SAs) that may be "in negotiation" on a node. The range is from 1 through 256. The default value is 256.
Total IPSEC Intf	The total number of IPsec tunnel interfaces.
Total Peers	The total number of peers.
Total IPSEC SA	The total number of IPsec SAs (for the total number of IKEv2 SAs).
Total IKE SA	The total number of IKEv2 SAs including SAs in active, constructing, and dying states.
Cookie Challenge Number	The threshold for issuing an IKEv2 cookie challenge. A challenge is issued when the number of half-open IKEv2 security associations (SAs) crosses the threshold value. The range is from 1 through 512. Cookie challenge is disabled by default.
Http Cert Enable	When HTTP Cert is enabled then HTTP_CERT_LOOKUP_SUPPORTED is sent with the CERT_REQ payload. HTTP Cert is disabled by default.

Examples

The following example displays global IKEv2 configuration information.

```
device# show ikev2
IKEv2 Global data:
Retry Count          : 5            Max Exchange Time       : 30
Retransmit Interval  : 5            Max SA                  : 256
Max SA In Nego       : 32           Total IPSEC Intf        : 0
Total Peers          : 0            Total IPSEC SA          : 0
Total IKE SA         : 0            Cookie Challenge Number : 0
NAT-T Support enabled: True         NAT Keepalive           : 5
Http Cert Enable        : False (True/False)
```

History

Release version	Command history
08.0.50	This command was introduced.

show ikev2 auth-proposal

Displays configuration information about Internet Key Exchange version 2 (IKEv2) authentication proposals.

Syntax

show ikev2 auth-proposal [*name*]

Parameters

name

Specifies the name of an IKEv2 authentication proposal.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

When an IKEv2 authentication proposal is not specified, this command displays information about all configured authentication proposals.

Command Output

The **show ikev2 auth-proposal** command displays the following information:

Output field	Description
Ikev2 Auth-Proposal	The name of an IKEv2 authentication proposal.
Local Auth Method	Local authentication method.
Remote Auth Method	Remote authentication method.
pre-share-key	Pre-shared key (the encrypted format is displayed).

Examples

The following example displays information about the IKEv2 authentication proposal configuration.

```
device# show ikev2 auth-proposal
================================================================================
Ikev2 Auth-Proposal : def-ike-auth-prop
Local Auth Method   : pre_shared
Remote Auth Method  : pre_shared
pre-share-key       : $QG5HTT1Ebk1TVW5NLWIhVW5ATVMhLS0rc1VA
```

History

Release version	Command history
08.0.50	This command was introduced.

show ikev2 policy

Displays configuration information about Internet Key Exchange version 2 (IKEv2) policies.

Syntax

show ikev2 policy [*policy-name*]

Parameters

policy-name

Specifies the name of an IKEv2 policy.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

When a policy is not specified, this command displays information about all IKEv2 policies.

Command Output

The **show ikev2 policy** command displays the following information:

Output field	Description
Name	The name of an IKEv2 policy.
vrf	The front-door VRF (fvrf) to match for the policy.
Local address/Mask	The local IP address to match for the policy.
Proposal	The IKEv2 proposal that is configured for the policy.
Ref Count	The number of IPsec profiles that refer to this IKEv2 policy.

Examples

The following example displays information about all configured IKEv2 policies.

```
device# show ikev2 policy

   Name                : ike_policy_red
   vrf                 : any
   Local address/Mask  : 0.0.0.0/0.0.0.0
   Proposal            : ike_proposal_red
   Ref Count           : 0

   Name                : def-ike-policy
   vrf                 : any
   Proposal            : def-ike-prop
   Ref Count           : 0
```

History

Release version	Command history
08.0.50	This command was introduced.

show ikev2 profile

Displays configuration information about Internet Key Exchange version 2 (IKEv2) profiles.

Syntax

show ikev2 profile [*profile-name*]

Parameters

profile-name

Specifies the name of an IKEv2 profile.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

When a profile is not specified, this command displays information about all IKEv2 profiles.

Command Output

The **show ikev2 profile** command displays the following information:

Output field		Description
IKEv2 Profile		The IKEv2 profile name.
Auth Profile		The authentication profile for this IKEv2 profile.
Match Criteria		
Inside VRF		The VRF name.
	Local	The local system ID that is compared with the received payload during negotiation. Permitted ID formats are: • address—An IPv4 address • fqdn—A fully qualified domain name, for example, router1.example.com • email—An email address, for example, test@test.com • key-id—A key ID
	Remote	Remote system ID that is compared with the received payload during negotiation. Permitted ID formats are: • address—An IPv4 address • fqdn—A fully qualified domain name, for example, router1.example.com • email—An email address, for example, test@test.com • key-id—A key ID

Output field	Description
Local Identifier	Local system ID that is sent with the payload during negotiation. Permitted ID formats are: • address—An IPv4 address. • fqdn—A fully qualified domain name, for example, router1.example.com. • email—An email address, for example, test@test.com. • key-id—A key ID.
Remote Identifier	Remote system ID. Permitted ID formats are: • address—An IPv4 address. • fqdn—A fully qualified domain name, for example, router1.example.com. • email—An email address, for example, test@test.com. • key-id—A key ID.
Lifetime	The IKEv2 SA lifetime (in minutes). This is also known as the rekey time.
Keepalive Check	The interval, in seconds, between the IKEv2 messages sent to detect a dead peer.
Initial contact	The initial contact configuration status. When a device reboots, peer devices may have security associations (SAs) that are no longer valid. When initial contact is enabled, an initial contact message is sent to ensure that old security associations (SAs) on the peer are deleted.
Ref Count	Number of IPsec profiles that refer to this IKEv2 profile.

Examples

The following example displays configuration information for an IKEv2 profile named prof_mktg.

```
device# show ikev2 profile ipsec_tunnel_1

IKEv2 Profile       : ipsec_tunnel_1
Auth Profile        : ipsec_tunnel_1
Match Criteria      :
Inside VRF         : vrf1
  Local:
   email ipsec_tunnel_1@example.com
  Remote:
   email ipsec_tunnel_1@example.com
Local Identifier    : email ipsec_tunnel_1@example.com
Remote Identifier   : email ipsec_tunnel_1@example.com
Lifetime            : 2592000 sec
Keepalive Check     : 10 sec
Initial contact     : yes
Ref Count           : 1
```

History

Release version	Command history
08.0.50	This command was introduced.

show ikev2 proposal

Displays configuration information about Internet Key Exchange version 2 (IKEv2) proposals.

Syntax

show ikev2 proposal [*name*]

Parameters

name

Specifies the name of an IKEv2 proposal.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

When an IKEv2 proposal is not specified, this command displays configuration information for all IKEv2 proposals.

Command Output

The **show ikev2 proposal** command displays the following information:

Output field	Description
Name	The name of an IKEv2 proposal.
Encryption	The encryption algorithms that are configured for the proposal.
Integrity	The integrity algorithms that are configured for the proposal.
PRF	The pseudorandom function algorithms that are configured for the proposal.
DH Group	The Diffie-Hellman groups that are configured for the proposal.
Ref Count	The number of IPsec profiles that refer to this IKEv2 proposal

Examples

The following example shows how to display information about the IKEv2 proposal configuration.

```
device# show ikev2 proposal

     Name       : def-ike-prop
     Encryption : aes256
     Integrity  : sha384
     PRF        : sha384
     DH Group   : 384_ECP/Group 20
     Ref Count  : 2
```

History

Release version	Command history
08.0.50	This command was introduced.

show ikev2 sa

Displays configuration information about current Internet Key Exchange version 2 (IKEv2) security associations (SAs).

Syntax

show ikev2 sa [**detail**]

show ikev2 sa fvrf *vrf-name*

show ikev2 sa interface *tunnel-port* [**detail**]

show ikev2 sa ipv4

show ikev2 sa ipv6

show ikev2 sa local { *ip-address* | *ipv6-address* } [**detail**]

show ikev2 sa remote { *ip-address* | *ipv6-address* } [**detail**]

Parameters

detail
Specifies the display of detailed information.

fvrf *vrf-name*
Specifies the name of a forwarding VRF.

interface *tunnel-port*
Specifies a tunnel port number.

ipv4
Specifies IPv4 connections.

ipv6
Specifies IPv6 connections.

local *ip-address*
Specifies a local interface.

ip-address
Specifies an IPv4 address.

ipv6-address
Specifies an IPv6 address.

remote
Specifies a remote interface.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

When the **detail** option is omitted, only the basic SA information is displayed.

Command Output

The **show ikev2 sa** command displays the following information:

Output field	Description
Total SA	The total number of IKEv2 SAs, that is; SAs that are in active, constructing, and dying states.
Active SA	The number of IKEv2 SAs in an active state.
Constructing SA	The number of IKEv2 SAs in a constructing state.
Dying SA	The number of IKEv2 SAs in an dying state.
tnl-id	The tunnel interface ID for the IKEv2 SA.
local	The local address of the tunnel.
remote	The remote address of the tunnel.
status	The IKEv2 SA state.
vrf(i)	The base or internal VRF for the IKEv2 tunnel.
vrf(f)	The front-end (customer end) VRF for the IKEv2 tunnel.
Role	The role of the device (initiator, responder).
Local SPI	The local security parameter index (SPI) for the IKEv2 SA.
Remote SPI	The remote SPI for the IKEv2 SA.
Profile	The IKEv2 profile for the session.
Policy	The IKEv2 policy for the session.
Auth Proposal	The IKEv2 authentication proposal for the session.

Examples

The following example displays information about the current SA configuration, in which there are four active SAs.

```
device# show ikev2 sa

Total SA : 4
Active SA: 4    : Constructing SA:0     : Dying SA:0
-------------------------------------------------------------------------------
tnl-id   local           remote          status   vrf(i)        vrf(f)
-------------------------------------------------------------------------------
tnl 18   10.18.3.4/500   10.18.3.5/500   active   default-vrf   default-vrf
tnl 22   10.22.3.4/500   10.22.3.5/500   active   default-vrf   default-vrf
tnl 19   10.19.3.4/500   10.19.3.5/500   active   default-vrf   default-vrf
tnl 20   10.20.3.4/500   10.20.3.5/500   active   default-vrf   default-vrf
```

The following example displays detailed IKEv2 SA information.

```
device# show ikev2 sa detail

Total SA : 1
Active SA: 1    : Constructing SA:0     : Dying SA:0
--------------------------------------------------------------------------------
tnl-id  Local           Remote          Status       Vrf(i)      Vrf(f)
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
tnl 1   10.1.41.1       10.4.41.1       Active       vrf1        vrf2
--------------------------------------------------------------------------------
Role                : Initiator
Local SPI           : 0x6fb19219160c7d71     Remote SPI: 0xde1b24e5764f311e
Profile             : p1
Policy              : ipsec_tunnel_1
Auth Proposal       : p1
```

The following example displays IKEv2 SA information, including information about IPv6 connections.

```
device# show ikev2 sa
Total SA : 7
Active SA: 7    : Constructing SA:0     : Dying SA:0
--------------------------------------------------------------------------------------------------------------------
---------------
tnl-id  Local            Remote            Status       Vrf(i)      Vrf(f)
--------------------------------------------------------------------------------------------------------------------
---------------
tnl 8   2220::1          5002::2           Active       default-vrf default-vrf
tnl 7   1110::1          5002::2           Active       default-vrf default-vrf
tnl 1   1000::1          1004::2           Active       default-vrf default-vrf
tnl 4   120.1.1.1        110.1.1.1         Active       default-vrf default-vrf
tnl 11  1000::1          1003::2           Active       default-vrf default-vrf
tnl 9   3330::1          5002::2           Active       default-vrf default-vrf
tnl 3   100.1.1.1        104.1.1.2         Active       default-vrf default-vrf
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support was added for IPv6.

show ikev2 session

Displays Internet Key Exchange version 2 (IKEv2) session information that includes rekeys and other negotiated information.

Syntax

show ikev2 session [*local-spi-id* | **detail**]

Parameters

local-spi-id

Specifies the security parameter index (SPI) for the IKEv2 session.

detail

Specifies the display of detailed information about IKEv2 sessions.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

Command Output

The **show ikev2 session** command displays the following information:

Output field	Description
IKE count	The total number of IKEv2 security associations (SAs).
Child Sa Count	The total number of IPsec security associations (SAs).
tnl-id	The tunnel interface ID for the IKEv2 SA.
local	The local address of the tunnel.
remote	The remote address of the tunnel.
status	The IKEv2 SA state.
vrf(i)	The base or internal VRF for the IKEv2 tunnel.
vrf(f)	The front-end (customer end) VRF for the IKEv2 tunnel.
Encr	The encryption algorithm used by this session after IKEv2 negotiations.
Hash	The hashing algorithm used by this session after IKEv2 negotiations.
DH Grp	The Diffie-Hellman (DH) group used by this session after IKEv2 negotiations.
Auth	The authentication method used by this session after IKEv2 negotiations.
PRF	The pseudorandom function (PRF) used by this session after IKEv2 negotiations.
Local spi	The local security parameter index (SPI) for the session.
Remote spi	The remote SPI for the session.
Life/Active Time	The configured IKEv2 rekey time and the time left until the next rekey.

Output field	Description
Rekey count Local	The total number of session key changes for the IKEv2 SA that were initiated by the local device.
Rekey count Remote	The total number of session key changes for the IKEv2 SA that were initiated by the remote device.
Status Description	The IKEv2 SA state.
Initiator id	The initiator identity for the IKEv2 SA.
Responder id	The responder identity for the IKEv2 SA.
no Exchange in progress	Indicates that this session is not in an exchange state.
next request message id	The next message ID for the session.
Keepalive timer	The interval between IKEv2 messages that are sent to detect if a peer is still alive.
Total keepalive sent	The total number of "keepalive" messages sent for the session.
Total keepalive received	The total number of "keepalive" messages received for the session.
Total Bytes sent	The total number of bytes sent in the session.
Total Bytes Received	The total number of bytes received in the session.
Time past since last msg	The elapsed time since the last message.
NAT-T	Network Address Translation (NAT) configuration status.
Child Sa	IPsec SA details.
id	The numeric identifier for an IPsec SA.
Local selector	The local traffic selector.
Remote selector	The remote traffic selector.
ESP SPI IN/OUT	The IPsec SPI for ingress and the SPI for egress.
Encryption	The encryption algorithm used by the session.
ICV Size	The size of the integrity check value (ICV) for the encryption algorithm.
Esp_hmac	The hashed message authentication code (HMAC) algorithm used by the session.
Authentication	The authentication algorithm used by the session.
DH Group	The Diffie-Hellman (DH) group used by the authentication algorithm.
Mode	The Encapsulating Security Protocol (ESP) mode for the session.
Rekey count Local	The total number of changes to the IPsec SA session key initiated by the local device.
Rekey count Remote	The total number of changes to the IPsec SA session key initiated by the remote device.

Examples

The following example displays IKEv2 session information.

```
device# show ikev2 session

IKE count:1, Child Sa Count:2
tnl-id     local        remote       status     vrf(i)        vrf(f)
-------------------------------------------------------------------------------
tnl 18     10.18.3.4    10.18.3.5    active     default-vrf   default-vrf
-------------------------------------------------------------------------------
    Encr: aes-cbc-256, Hash: sha384, DH Grp:384_ECP/Group 20, Auth: pre_shared
    PRF: sha384
    Is Initiator: Yes
    Local spi   : 0xe115847e85ad667b       Remote spi: 0x7bb5ee3b6074a4b4
    Life/Active Time: 2592000/534 sec
    Rekey count Local: 0       Rekey count Remote: 2
Child Sa:
 id 1
       Local selector  0.0.0.0/0 - 255.255.255.255
       Remote selector 0.0.0.0/0 - 255.255.255.255
       ESP SPI IN/OUT: 0xb278/0x7935
       Encryption: aes-gcm-256, ICV Size: 16 octects, Esp_hmac: Null
       Authetication: null  DH Group:none , Mode: tunnel
       Rekey count Local: 0       Rekey count Remote: 2
```

The following example displays detailed IKEv2 session information.

```
device# show ikev2 session detail

IKE count:4, Child Sa Count:8
tnl-id     local        remote       status     vrf(i)        vrf(f)
-------------------------------------------------------------------------------
tnl 18     10.18.3.4    10.18.3.5    active     default-vrf   default-vrf
-------------------------------------------------------------------------------
    Encr: aes-cbc-256, Hash: sha384, DH Grp:384_ECP/Group 20, Auth: pre_shared
    PRF: sha384
    Local spi   : 0xe115847e85ad667b       Remote spi: 0x7bb5ee3b6074a4b4
    Life/Active Time: 2592000/614 sec
    Rekey count Local: 0       Rekey count Remote: 2
    Status Description: active
    Initiator id: address 18.3.3.4    Responder id: address 18.3.3.5
    no Exchange in progress
    next request message id=4
    Keepalive timer: 300 seconds, retry 0
        Total keepalive sent: 2
        Total keepalive received: 0
        Total Bytes sent    : 524   Total Bytes Received   : 672
    Time past since last msg: 14
    NAT-T is not detected
Child Sa:
 id 1
       Local selector  0.0.0.0/0 - 255.255.255.255
       Remote selector 0.0.0.0/0 - 255.255.255.255
       ESP SPI IN/OUT: 0xb278/0x7935
       Encryption: aes-gcm-256, ICV Size: 16 octects, Esp_hmac: Null
       Authetication: null  DH Group:none , Mode: tunnel
       Rekey count Local: 0       Rekey count Remote: 2
```

History

Release version	Command history
08.0.50	This command was introduced.

show ikev2 statistics

Displays statistical information about Internet Key Exchange version 2 (IKEv2).

Syntax

show ikev2 statistics

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

Command Output

The **show ikev2 statistics** command displays the following information:

Output field		Description
Total IKEv2 SA Count active		The total number of IKEv2 security associations (SAs) in an active state.
Incoming IKEv2 Requests		The number of IKEv2 SAs (accepted and rejected) initiated by the peer device.
Outgoing IKEv2 Requests		The number of IKEv2 SAs initiated by the local device.
	Accepted	The total number of outgoing IKEv2 SAs that were accepted.
	Rejected	The total number of outgoing IKEv2 SAs that were rejected.
	Rejected due to no cookie	The total number of outgoing IKEv2 SAs that were rejected due to no cookie.
IKEv2 Packet Statistics		
	Total Packets Received	The total number of packets received.
	Total Packets Transmitted	The total number of packets transmitted.
	Total Packets Retransmitted	The total number of packets retransmitted.
	Total Failed Transmission	The total number of packets where transmission failed.
	Total Pending Packets	The total number of packets to be transmitted.
	Total Buffer Failed	The total number of packets where transmission failed due to a buffer issue.
	Total Keepalive Received	The total number of IKEv2 keepalive messages received.
	Total Keepalive Transmitted	The total number of IKEv2 keepalive messages transmitted.
IKEv2 Error Statistics		
	Unsupported Payload	The total number of IKEv2 packets received with an unsupported payload.
	Invalid IKE SPI	The total number of IKEv2 packets received with an invalid security parameter index (SPI).
	Invalid Version	The total number of IKEv2 packets received with an invalid version.
	Invalid Syntax	The total number of IKEv2 packets received with invalid syntax.
	Negotiation Timeout	The total number of IKEv2 sessions deleted due to dead peer detection (DPD) or negotiation timeouts.
	No Policy	The total number of IKEv2 sessions deleted or rejected due to a policy issue.
	No Protection Suite	The total number of IKEv2 sessions deleted or rejected due to a protection suite issue.

Output field		Description
	Policy Error	The total number of IKEv2 sessions deleted or rejected due to policy error.
	IKE Packet Error	The total number of IKEv2 or IPsec packets received with a packet error.
	Discard Policy	The total number of IKEv2 or IPsec sessions deleted or rejected due to a policy error or mismatch.
	Proposal Mismatch	The total number of IKEv2 or IPsec packets sent or received with a proposal mismatch.
	Invalid Selectors	The total number of IKEv2 or IPsec packets sent or received with invalid selectors.
	Internal Error	The total number of IKEv2 or IPsec packets sent or received with an internal error.
	SA Overflow	The total number of times the maximum SA count was reached.
	IKE SA Overflow	The number of times the maximum IKEv2 SA count was reached.
	IPSEC SA Overflow	The number of times the maximum IPsec SA count was reached.
	Authentication Failed	The total number of IKEv2 or IPsec packets sent or received when authentication failed.
	Others	The total number of IKEv2 or IPsec packets sent or received with other error types.
	Number of HW-SPI Add write	The number of times the creation of an IPsec SPI was written to the hardware.
	Number of HW-SPI Delete	The number of times the deletion of an IPsec SPI was written to the hardware.

Examples

The following example displays IKEv2 statistics.

```
device# show ikev2 statistics

Total IKEv2 SA Count active: 0
Incoming IKEv2 Requests: Accepted: 0 Rejected: 0
Outgoing IKEv2 Requests: 0
    Accepted: 0 Rejected: 0 Rejected due to no cookie: 0
IKEv2  Packet Statistics:
    Total Packets Received     : 0
    Total Packets Transmitted  : 2
    Total Packets Retransmitted: 0
    Total Failed Transmission  : 0
    Total Pending Packets      : 0
    Total Buffer Failed        : 0
    Total Keepalive Received   : 0
    Total Keepalive Transmitted: 0
IKEv2 Error Statistics:
    Unsupported Payload   : 0        Invalid IKE SPI  : 0
    Invalid Version       : 0        Invalid Syntax   : 0
    Negotiation Timeout   : 0        No Policy        : 0
    No Protection Suite   : 0        Policy Error     : 0
    IKE Packet Error      : 1        Discard Policy   : 0
    Proposal Mismatch     : 0        Invalid Selectors: 0
    Internal Error        : 0        SA Overflow      : 0
    IKE SA Overflow       : 0        IPSEC SA Overflow: 0
    Authentication Failed : 0        Others           : 0
    Number of HW-SPI Add write : 0   Number of HW-SPI Delete write: 0
```

History

Release version	Command history
08.0.50	This command was introduced.

show inline power

Displays the inline power capacity, power allocation, power consumption, and power priority details for Power over Ethernet (PoE) ports.

Syntax

show inline power [**stack-unit** | **stack/slot/port** [**debug-info**]]

Parameters

stack-unit

Displays inline power information for the specified stack unit.

stack/slot/port

Displays inline power information for a specific interface.

debug-info

Displays inline power debugging information for the specified interface.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

Use this command to view details about PoE power usage.

You can view the PoE operational status for the entire device, for a specific PoE module, or for a specific interface.

Command Output

The **show inline power** command displays the following information.

Output field	Description
Power Capacity	The total PoE power supply capacity and the amount of available power (current free) for PoE-power-consuming devices. Both values are shown in milliwatts.
Power Allocations	The number of times the device fulfilled PoE requests for power.
Port	The slot number and port number.
Admin State	Specifies whether Power over Ethernet has been enabled on the port: • On: The **inline power** command was issued on the port. • Off: The **inline power** command has not been issued on the port.

Output field	Description
Oper State	Shows the status of inline power on the port: • On: The PoE power supply is delivering inline power to the powered device (PD). • Off: The PoE power supply is not delivering inline power to the PD. • Non-PD: Identifies the ports connected to nonpowered devices. • Denied: The port is in standby mode (waiting for power) because the device does not currently have enough available power for the port. **NOTE** When you enable a port using the CLI, it may take 12 or more seconds before the operational state of that port is displayed correctly in the **show inline power** output.
Power Consumed	The number of current, actual milliwatts that the PD is consuming.
Power Allocated	The number of milliwatts allocated to the port. This value is either the default or configured maximum power level or the power class that was automatically detected by the device.
PD Type	The type of PD connected to the port: • 802.3at: The PD connected to this port is 802.3at-compliant. • 802.3af: The PD connected to this port is 802.3af-compliant. • Legacy: The PD connected to this port is a legacy product (not 802.3af-compliant). • N/A: Power over Ethernet is configured on this port, and one of the following is true: – The device connected to this port is a nonpowered device. – No device is connected to this port. – The port is in standby or denied mode (waiting for power). **NOTE** Although not 802.3af-compliant, some legacy products may show the PD type as 802.3af.
PD Class	Determines the maximum amount of power that a PD receives. This field can also be "n/a" meaning that the device attached to the port cannot advertise its power class. **NOTE** If an 802.3at PD with a class 4 value is connected to a RUCKUS ICX switch, the switch must be running FastIron release 08.0.20 or later to be able to perform the necessary power negotiations.
Pri	The port inline power priority, which determines the order in which the port receives power while in standby mode (waiting for power). Ports with a higher priority receive power before ports with a lower priority. This value can be one of the following: • 3: Low priority • 2: High priority • 1: Critical priority

Output field	Description
Fault/Error	If applicable, the fault or error that occurred on the port: • critical temperature — The PoE chip temperature limit rose above the safe operating level, thereby powering down the port. • detection failed: discharged capacitor — The port failed capacitor detection (legacy PD detection) because of a discharged capacitor. This can occur when connecting a non-PD on the port. • detection failed: out of range capacitor — The port failed capacitor detection (legacy PD detection) because of an out-of-range capacitor value. This can occur when connecting a non-PD on the port. • internal h/w fault — A hardware problem hindered port operation. • lack of power: The port shut down due to lack of power. • main supply voltage high — The voltage was higher than the maximum voltage limit, thereby tripping the port. • main supply voltage low — The voltage was lower than the minimum voltage limit, thereby tripping the port. • overload state — The PD consumed more power than the maximum limit configured on the port, based on the default configuration, user configuration, or CDP configuration. • over temperature — The port temperature rose above the temperature limit, thereby powering down the port. • PD DC fault — A succession of underload and overload states, or a PD DC/DC fault, caused the port to shut down. • short circuit — A short circuit was detected on the port delivering power. • underload state — The PD consumed less power than the minimum limit specified in the 802.3af standard. • voltage applied from ext src — The port failed capacitor detection (legacy PD detection) because the voltage applied to the port was from an external source.
Total	The total power in milliwatts being consumed by all PDs connected to the interface module and the total power in milliwatts allocated to all PDs connected to the interface module.
Grand Total	The total number of current, actual milliwatts being consumed by all PDs connected to the PoE device and the total number of milliwatts allocated to all PDs connected to the PoE device.

Examples

The following is sample output from the **show inline power** command.

```
device# show inline power

Power Capacity:        Total is 2160000 mWatts. Current Free is 18800 mWatts.
Power Allocations:     Requests Honored 769 times

... some lines omitted for brevity ...

Port   Admin Oper   --Power(mWatts)--  PD Type   PD Class Pri Fault/Error
       State State Consumed Allocated
-------------------------------------------------------------------------
1/1/1  On    On     5070     9500      802.3af   n/a      3   n/a
1/1/2  On    On     1784     9500      Legacy    n/a      3   n/a
1/1/3  On    On     2347     9500      802.3af   n/a      3   n/a
1/1/4  On    On     2441     9500      Legacy    n/a      3   n/a
1/1/5  On    On     6667     9500      802.3af   Class 3  3   n/a
1/1/6  On    On     2723     9500      802.3af   Class 2  3   n/a
1/1/7  On    On     2347     9500      802.3af   n/a      3   n/a
1/1/8  On    On     2347     9500      802.3af   n/a      3   n/a
1/1/9  On    On     2347     9500      802.3af   n/a      3   n/a
1/1/10 On    On     4976     9500      802.3af   Class 3  3   n/a
1/1/11 On    On     4882     9500      802.3af   Class 3  3   n/a
1/1/12 On    On     4413     9500      802.3af   Class 1  3   n/a
1/1/13 On    On     7793     9500      802.3af   n/a      3   n/a
1/1/14 On    On     7512     9500      802.3af   n/a      3   n/a
1/1/15 On    On     8075     9500      802.3af   n/a      3   n/a
1/1/16 On    On     4131     9500      802.3af   Class 1  3   n/a
1/1/17 On    Non-PD 0        0         n/a       n/a      3   n/a
1/1/18 On    Non-PD 0        0         n/a       n/a      3   n/a
1/1/19 On    Off    0        30000     n/a       n/a      3   n/a
1/1/20 On    Off    0        30000     n/a       n/a      3   n/a
1/1/21 On    Non-PD 0        0         n/a       n/a      3   n/a
1/1/22 On    Non-PD 0        0         n/a       n/a      3   n/a
1/1/23 On    Non-PD 0        0         n/a       n/a      3   n/a
1/1/24 On    Non-PD 0        0         n/a       n/a      3   n/a
-------------------------------------------------------------------------
Total                    137367         242000

... some lines omitted for brevity...

Grand Total             1846673        2127400
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.50	A new operating state was added (Non-PD).

show inline power debug-info

Displays inline power debug information.

Syntax

show inline power debug-info[stack_unit|unit/slot/port]

Parameters

stack_unit
: Displays inline power debug information for the specified stack unit ID.

unit/slot/port
: Displays inline power debug information for the specified interface.

Modes

Privileged exec mode

Usage Guidelines

The command prints the complete output of **show inline power**port-id plus the last five hardware port states, and the last five software port states.

Examples

Use the following command to display inline power information that is of use in debugging the configuration.

```
device(config)#show inline power debug-info 2/1/1

Port   Admin   Oper    ---Power(mWatts)---  PD Type  PD Class  Pri  Fault/
       State   State   Consumed  Allocated                        Error
-------------------------------------------------------------------------
  2/1/1 On      On         13200      15400  802.3af  Class 3     3  n/a
 configCmd:Legacy Off, hwEvLatch:0, overdrive:Enabled, pair4En:1
 Last 5 HW port status:
        1:0x1A User OFF                              2:0x01 af/at PD Detected
        3:0x1E Underload State                       4:0x1B Detection in Progress
        5:0x01 af/at PD Detected

Max Power Capability for 2pair PD :45000 mWatts
Highest Power Requested by PD Through LLDP/CDP :n/a
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.61	The output was enhanced with PoE overdrive information.
08.0.90	The output was modified to display overdrive and legacy PD detection configuration information.

show inline power detail

Displays detailed information about the PoE power supplies installed in a PoE device.

Syntax

show inline power detail[*stack-unit*|**debug-info***stack-unit*]

Parameters

stack-unit

Displays detailed inline power information for the specified stack unit.

debug-info

Displays detailed debug information.

Modes

User EXEC mode

Usage Guidelines

You can view the PoE operational status for the entire device, for a specific PoE module, or for a specific interface.

Command Output

The **show inline power detail** command displays the following information.

Output field	Description
Max Curr:	The number of milliwatts available for the unit in the stack, not the entire stack. This value is either the default or configured maximum power level, or the power class that was automatically detected by the device.
Voltage	The number of Volts allocated to the stack.
Capacity	The total PoE power supply capacity and the amount of available power (current free) for PoE-power-consuming devices. Both values are shown in milliwatts.
Firmware Version	Returns firmware version information.
Hardware Version	Returns hardware version information.
Power Allocations	The number of times the device fulfilled PoE requests for power.
Cumulative Port State Data	Shows the number of ports with a particular status/configuration.
Cumulative Port Power Data	Shows the port power consumption and allocation.

Output field	Description
Device Status	The status of the device: • Failed: No (bad or unreachable) PoE device found (bootup time) • Good: OK - Expected PoE device Found (Zone1, no VOP) • Revived: Device is currently refreshed • n/a: Reserved • Lost: Device lost or different from expected (while in operation) • VOP-Sev1: Device error 1 (Zone2, VOP severity 1) • VOP-Sev2: Device error 1 (Zone2, VOP severity 2) • VOP-Sev3: Device error 1 (Zone2, VOP severity 3) • VmErr: Device Vmain Error • Vm2vErr: Device Vmain < System AVG Vmain by 2v or more • Recovered: OK - Expected PoE device Found (Zone3, recovered from VOP)

Examples

The following example shows sample output from the **show inline power detail** command, including information about the device status, when the **debug-info** keyword is used.

```
device> show inline power detail debug-info

Power Supply Data On unit 1:
++++++++++++++++++

Power Supply Data:
++++++++++++++++++
power supply 1 is not present
Power Supply #2:
        Max Curr:       13.9 Amps
        Voltage:        54.0 Volts
        Capacity:       748 Watts
        PoePower:       748 Watts

POE Details Info. On Unit 1 :

General PoE Data:
++++++++++++++++++

Firmware
Version
----------------
02.1.1 Build 002
Hardware
Version
----------------
V2R2
Note: Number of PoE Devices:9. This number of LSBs should be zero
                in devFaultMap, devTempOff,devTempAlarm
First System Status:
               cpuStatus1 (fwDnldReq:0, errController:0), cpuStatus2(errMemory:0),
               factoryDefault:1, genInternalErr:0, privateLabel:0, userByte:ff,
               devFaultMap:0, devTempOff: 0, devTempAlarm: 0, intReg:2f2c
Latest System Status:
               cpuStatus1 (fwDnldReq:0, errController:0), cpuStatus2(errMemory:0),
               factoryDefault:0, genInternalErr:0, privateLabel:0, userByte:0,
               devFaultMap:0, devTempOff: 0, devTempAlarm: 0, intReg:2f2c
Device HW version         : 0:V2R2      1:V2R2      2:V2R2      3:V2R2      4:V2R2      5:V2R2
6:V2R2      7:V2R2      8:V2R2
Device Temperature(deg-C) : 0:40        1:40        2:42        3:44        4:48        5:48
6:46        7:46        8:44
Device Status             : 0:Good      1:Good      2:Good      3:Good      4:VOP-Sev1  5:VOP-Sev1
6:Good      7:Good      8:Good

Cumulative Port State Data:
++++++++++++++++++++++++++
#Ports    #Ports     #Ports    #Ports    #Ports       #Ports     #Ports
Admin-On  Admin-Off  Oper-On   Oper-Off  Off-Denied   Off-No-PD  Off-Fault
-------------------------------------------------------------------------
48        0          10        38        0            38         0

Cumulative Port Power Data:
++++++++++++++++++++++++++
#Ports  #Ports  #Ports        Power       Power
Pri: 1  Pri: 2  Pri: 3  Consumption  Allocation
-----------------------------------------------
0       0       48         42.700 W   507.515 W


Power Supply Data On unit 6:
++++++++++++++++++

Power Supply Data:
++++++++++++++++++
Power Supply #1:
```

```
        Max Curr:       13.9 Amps
        Voltage:        54.0 Volts
        Capacity:       748 Watts
        PoePower:       748 Watts
power supply 2 is not present

POE Details Info. On Unit 6 :

General PoE Data:
++++++++++++++++
Firmware
Version
---------------
02.1.1 Build 002
Hardware
Version
---------------
V2R4
Note: Number of PoE Devices:9. This number of LSBs should be zero
                in devFaultMap, devTempOff,devTempAlarm
First System Status:
               cpuStatus1 (fwDnldReq:0, errController:0), cpuStatus2(errMemory:0),
               factoryDefault:1, genInternalErr:0, privateLabel:0, userByte:ff,
               devFaultMap:0, devTempOff: 0, devTempAlarm: 0, intReg:3304
Latest System Status:
               cpuStatus1 (fwDnldReq:0, errController:0), cpuStatus2(errMemory:0),
               factoryDefault:0, genInternalErr:0, privateLabel:0, userByte:0,
               devFaultMap:0, devTempOff: 0, devTempAlarm: 0, intReg:3304
Device HW version         : 0:V2R4      1:V2R4      2:V2R4      3:V2R4      4:V2R4      5:V2R4
6:V2R4      7:V2R4      8:V2R4
Device Temperature(deg-C) : 0:42        1:40        2:42        3:44        4:42        5:46
6:40        7:44        8:40
Device Status             : 0:Good      1:Good      2:Good      3:Good      4:Good      5:Good
6:Good      7:Good      8:Good

Cumulative Port State Data:
++++++++++++++++++++++++++
#Ports    #Ports     #Ports   #Ports    #Ports       #Ports     #Ports
Admin-On  Admin-Off  Oper-On  Oper-Off  Off-Denied   Off-No-PD  Off-Fault
-------------------------------------------------------------------------
48        0          11       37        0            36         0

Cumulative Port Power Data:
++++++++++++++++++++++++++
#Ports  #Ports  #Ports        Power       Power
Pri: 1  Pri: 2  Pri: 3  Consumption  Allocation
-----------------------------------------------
0       0       48         46.700 W   445.435 W
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.50	Added the **debug-info** option.
08.0.60	The output field included Hardware Version.
08.0.70d	Information on device status was added to the command output.
08.0.80e	Information on device status was added to the command output.

show inline power emesg

Displays a history of Power over Ethernet (PoE) events.

Syntax

show inline power emesg *unit-id count*

Parameters

unit-id

Specifies the number of the unit.

count

Number of logged PoE events to print. By default, 2000 PoE events are printed if a count is not specified.

Modes

Privileged EXEC mode

Usage Guidelines

The command prints the last 2000 PoE events from each unit of the system.

Examples

The following is sample output from the **show inline power emesg** command.

```
device# show inline power emesg 18 16
Log Size: 2000 entries.         Number of entries in use: 2000  for unit 18(full).
Logging is active.
Log printing is requested for last (latest) 16 entries.
+-------+----------------+-----+-----+----------+-------------------------------------------+
|SL Num.|Timestamp       | Sys | Dev | Port     | Event Trace Message                       |
+-------+----------------+-----+-----+----------+-------------------------------------------+
 1      | Jan 23 20:58:00 |  N  | N/A | 18/1/5   | Port is in detection mode (port is off)
 2      | Jan 23 20:58:42 |  N  | N/A | 18/1/5   | Port has a non-standard PD connected and is o
 3      | Jan 23 20:58:46 |  N  | N/A | 18/1/5   | Port is in detection mode (port is off)
 4      | Jan 23 20:59:39 |  N  | N/A | 18/1/13  | Port is off due to overload state
 5      | Jan 23 20:59:51 |  N  | N/A | 18/1/13  | Port is in detection mode (port is off)
 6      | Jan 23 20:59:56 |  N  | N/A | 18/1/13  | Port is off due to overload state
 7      | Jan 23 21:00:07 |  N  | N/A | 18/1/13  | Port is in detection mode (port is off)
 8      | Jan 23 21:00:20 |  N  | N/A | 18/1/13  | Port is off due to overload state
 9      | Jan 23 21:00:30 |  N  | N/A | 18/1/13  | Port is in detection mode (port is off)
 10     | Jan 23 21:01:24 |  N  | N/A | 18/1/13  | Port is off due to overload state
 11     | Jan 23 21:01:32 |  N  | N/A | 18/1/13  | Port is in detection mode (port is off)
 12     | Jan 23 21:02:20 |  N  | N/A | 18/1/5   | Port has a non-standard PD connected and is o
 13     | Jan 23 21:02:23 |  N  | N/A | 18/1/5   | Port is in detection mode (port is off)
 14     | Jan 23 21:02:39 |  N  | N/A | 18/1/13  | Port is off due to overload state
 15     | Jan 23 21:02:46 |  N  | N/A | 18/1/13  | Port is in detection mode (port is off)
 16     | Jan 23 21:03:10 |  N  | N/A | 18/1/13  | Port has a non-standard PD connected and is o
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.61	This command was modified so that the *unit-id* option was added.

show interfaces ethernet

Displays Ethernet interface information.

Syntax

show interfaces ethernet *stackid/slot/port*

Parameters

stackid/slot/port

Specifies the stack ID number, slot number, and port number for an existing Ethernet interface.

Modes

Privileged EXEC mode

Global configuration mode

Examples

The following example shows whether MVRP is enabled on the interface.

```
device(config)# show interfaces ethernet 1/1/1
GigabitEthernet1/1/1 is up, line protocol is up
Port up for 2 hour(s) 54 minute(s) 28 second(s)
Hardware is GigabitEthernet, address is 748e.f882.0011 (bia 748e.f882.0011)
Configured speed auto, actual 1Gbit, configured duplex fdx, actual fdx
Configured mdi mode AUTO, actual MDIX
Untagged member of L2 VLAN 1, port state is FORWARDING
BPDU guard is Disabled, ROOT protect is Disabled, Designated protect is Disabled
Link Error Dampening is Disabled
STP configured to ON, priority is level0, mac-learning is enabled
Openflow is Disabled, Openflow Hybrid mode is Disabled, Flow Control is config enabled, oper enabled,
negotiation disabled
Mirror disabled, Monitor disabled
Mac-notification is disabled
VLAN-Mapping is disabled
MVRP is enabled
Not member of any active trunks
Not member of any configured trunks
No port name
IPG MII 0 bits-time, IPG GMII 0 bits-time
MTU 1500 bytes, encapsulation ethernet
MMU Mode is Store-and-forward
300 second input rate: 970342992 bits/sec, 202831 packets/sec, 100.00% utilization
300 second output rate: 970343184 bits/sec, 202831 packets/sec, 100.00% utilization
2431385969 packets input, 1453965378094 bytes, 0 no buffer
Received 2431379477 broadcasts, 6491 multicasts, 0 unicasts
1 input errors, 1 CRC, 0 frame, 0 ignored
0 runts, 0 giants
2431612615 packets output, 1454102757122 bytes, 0 underruns
Transmitted 2431609583 broadcasts, 3032 multicasts, 0 unicasts
0 output errors, 0 collisions
Relay Agent Information option: Disabled
Protected: No
MAC Port Security: Disabled

This port is not being monitored for queue drops
Egress queues:
Queue counters    Queued packets        Dropped Packets
         0                  0                  0
         1                  0                  0
         2                  0                  0
         3                  0                  0
         4                  0                  0
         5                  0                  0
         6                  0                  0
         7                  0                  0
```

The following example shows detailed interface information. Note that the priority flow control (PFC) is shown as enabled and information for the unicast and multicast egress queues is shown separately.

```
device# show interfaces ethernet 1/1/22

10GigabitEthernet1/1/22 is up, line protocol is up
  Port up for 16 minutes 1 seconds
  Hardware is 10GigabitEthernet, address is aabb.ccdd.ef14 (bia aabb.ccdd.ef14)
  Configured speed 10Gbit, actual 10Gbit, configured duplex fdx, actual fdx
  Member of 1 L2 VLANs, port is tagged, port state is FORWARDING
  BPDU guard is Disabled, ROOT protect is Disabled, Designated protect is Disabled
  Link Error Dampening is Disabled
  STP configured to ON, priority is level0, mac-learning is enabled
  ….
  …..
  MTU 1500 bytes
  Priority-Flow-Control is Enabled
  300 second input rate: 37014512 bits/sec, 9036 packets/sec, 0.38% utilization
  300 second output rate: 731174584 bits/sec, 178509 packets/sec, 7.58% utilization
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 multicasts, 0 unicasts
  0 input errors, 0 CRC, 0 frame, 0 ignored
  0 runts, 0 giants
  26055807 packets output, 13340529672 bytes, 0 underruns
  Transmitted 0 broadcasts, 98 multicasts, 26055709 unicasts
  0 output errors, 0 collisions
  Relay Agent Information option: Disabled

UC Egress queues:
Queue counters    Queued packets    Dropped Packets
         0                  0            2074860
         1            2349160            2074861
         2            2349163            2074861
         3            2349165            2074860
         4            2349163            2074860
         5            2349165            2074860
         6            5461694             518651
         7            6498353                  0


MC Egress queues:
Queue counters    Queued packets    Dropped Packets
         0                  0                  0
         1                  0                  0
         2                  0                  0
         3                  0                  0
         4                  0                  0
```

The following example shows information for an interface that has an ingress profile and an egress profile attached to a port.

```
device(config-if-e40000-1/1/1)# show interfaces ethernet 1/1/1

40GigabitEthernet1/1/1 is up, line protocol is up
  Port up for 5 days 12 hours 45 minutes 48 seconds
  Hardware is 40GigabitEthernet, address is 748e.f8f9.3d80 (bia 748e.f8f9.3d80)
  Configured speed 40Gbit, actual 40Gbit, configured duplex fdx, actual fdx
  Configured mdi mode AUTO, actual none
  Member of 1 L2 VLANs, port is tagged, port state is FORWARDING
  BPDU guard is Disabled, ROOT protect is Disabled, Designated protect is Disabled
  Link Error Dampening is Disabled
  STP configured to ON, priority is level0, mac-learning is enabled
  Flow Control is enabled
  Mirror disabled, Monitor disabled
  Mac-notification is disabled
  Not member of any active trunks
  Not member of any configured trunks
  No port name
  IPG MII 96 bits-time, IPG GMII 96 bits-time
  MTU 1500 bytes, encapsulation ethernet
  Ingress Profile is i1
  Egress Profile is e1
  300 second input rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
  300 second output rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
  8060797794 packets input, 1031782117647 bytes, 0 no buffer
  Received 0 broadcasts, 0 multicasts, 8060797794 unicasts
  4 input errors, 0 CRC, 0 frame, 0 ignored
  0 runts, 0 giants
  8078157201 packets output, 1034004121728 bytes, 0 underruns
  Transmitted 0 broadcasts, 0 multicasts, 8078157201 unicasts
  0 output errors, 0 collisions
  Relay Agent Information option: Disabled
```

The following example shows information for the configured bandwidth on a specific interface. In this example the configured interface bandwidth value is 2000 kilobits per second.

```
device# show interfaces ethernet 1/1/1

GigabitEthernet1/1/1 is disabled, line protocol is down
  STP Root Guard is disabled, STP BPDU Guard is disabled
  Hardware is GigabitEthernet, address is 748e.f82a.6a00 (bia 748e.f82a.6a00)
  Configured speed auto, actual unknown, configured duplex fdx, actual unknown
  Interface bandwidth is 2000 kbps
```

History

Release version	Command history
08.0.20	This command was modified to include PFC status and separate unicast and multicast egress queues.
08.0.30	This command was modified to include configured bandwidth status.
08.0.95	This command was modified to display the status of MVRP (enabled or disabled) on an interface.

show interfaces lag

Displays information about the LAG interface including counters.

Syntax

show interfaces lag[*lag-id*|*lag-name*]

Parameters

lag-id

Displays information for a virtual LAG specified by the LAG ID. If the specified LAG ID is not available, a warning message is displayed.

lag-name

Displays information for a virtual LAG specified by the LAG name. If the specified LAG name is not available, a warning message is displayed.

Modes

User EXEC mode

Examples

The following command shows that the virtual LAG specified by LAG ID 2 is not available in the system.

```
device# show interfaces lag id2

Warning: can't find LAG id2
```

The following command shows information for the virtual LAG named lag1.

```
device# show interfaces lag 1

Lag lg1 is down, line protocol is down
Configured speed Auto, actual None, configured duplex fdx, actual none
Member of L2 VLAN ID 1, port is untagged, port state is None
BPDU guard is Disabled, ROOT protect is Disabled, Designated protect is Disabled
STP configured to ON, priority is level0, mac-learning is enabled
Openflowis Disabled, OpenflowHybrid mode is Disabled
Mirror disabled, Monitor disabled
Mac-notification is disabled
Member of active trunk ports 1/1/10,lg1, Lag Interface is lg1
Member of configured trunk ports 1/1/10,lg1, Lag Interface is lg1
No port name
300 second input rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
300 second output rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
0 packets input, 0 bytes, 0 no buffer
Received 0 broadcasts, 0 multicasts, 0 unicasts
0 input errors, 0 CRC, 0 frame, 0 ignored
0 runts, 0 giants
0 packets output, 0 bytes, 0 underruns
Transmitted 0 broadcasts, 0 multicasts, 0 unicasts
0 output errors, 0 collisions
Relay Agent Information option: Disabled
```

The following command shows information about the virtual LAG interface, including counters.

```
device(config-lag-blue)#show interfaces lag
Total number of LAGs:          4
Total number of deployed LAGs: 2
Total number of trunks created:2 (126 available)
LACP System Priority / ID:     1 / 609c.9fbc.bf14
LACP Long timeout:             90, default: 90
LACP Short timeout:            3, default: 3
=== LAG "blue" ID 3 (static Not Deployed) ===
LAG Configuration:
   Ports:
   Port Count:    0
   Lag Interface: lg3
   Trunk Type:    hash-based
=== LAG "blue1" ID 10 (dynamic Not Deployed) ===
LAG Configuration:
   Ports:
   Port Count:    0
   Lag Interface: lg10
   Trunk Type:    hash-based
   LACP Key:      20010
=== LAG "test" ID 1 (dynamic Deployed) ===
LAG Configuration:
   Ports:         e 1/1/5 e 1/1/7
   Port Count:    2
   Lag Interface: lg1
   Trunk Type:    hash-based
   LACP Key:      20001
Deployment: HW Trunk ID 1
Port       Link    State   Dupl Speed Trunk Tag Pvid Pri MAC             Name
1/1/5      Disable None    None None  1     No  1    0   609c.9fbc.bf18

1/1/7      Disable None    None None  1     No  1    0   609c.9fbc.bf18

Port       [Sys P] [Port P] [ Key ] [Act][Tio][Agg][Syn][Col][Dis][Def][Exp][Ope
]
1/1/5           1        1   20001   Yes   S   Agg  Syn  No   No   Def  No   Dwn
1/1/7           1        1   20001   Yes   S   Agg  Syn  No   No   Def  No   Dwn
 Partner Info and PDU Statistics
Port          Partner         Partner     LACP      LACP
            System ID          Key     Rx Count  Tx Count
1/1/5    1-0000.0000.0000        4        0         0
1/1/7    1-0000.0000.0000        6        0         0
 LAG test Counters:
         InOctets                    0          OutOctets                    0
           InPkts                    0            OutPkts                    0
  InBroadcastPkts                    0    OutBroadcastPkts                   0
  InMulticastPkts                    0    OutMulticastPkts                   0
    InUnicastPkts                    0      OutUnicastPkts                   0
        InBadPkts                    0
      InFragments                    0
       InDiscards                    0          OutErrors                    0
              CRC                    0         Collisions                    0
         InErrors                    0      LateCollisions                   0
       InGiantPkts                   0
       InShortPkts                   0
          InJabber                   0
   InFlowCtrlPkts                    0     OutFlowCtrlPkts                   0
     InBitsPerSec                    0       OutBitsPerSec                   0
     InPktsPerSec                    0       OutPktsPerSec                   0
    InUtilization                0.00%      OutUtilization                0.00%
```

History

Release version	Command history
08.0.30	This command was introduced.

Release version	Command history
08.0.61	The command was modified to include LAG ID options.

show interfaces management

Displays the status of a management interface.

Syntax

show interfaces management [*mgmt_interface*]

Parameters

mgmt_interface

Specifies a management interface.

Modes

Global configuration mode

Examples

To display the status of a management interface:

```
device(config-vlan-20)# show interfaces management 1
GigEthernetmgmt1 is disabled, line protocol is down
  Port down for 2 minute(s) 26 second(s)
  Hardware is GigEthernet, address is cc4e.24b4.6e64 (bia cc4e.24b4.6e7c)
  Configured speed auto, actual unknown, configured duplex fdx, actual unknown
  Configured mdi mode AUTO, actual unknown
  Member of VLAN 20, port is untagged, port state is NONE
  No port name
  MTU 1500 bytes
  300 second input rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
  300 second output rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 multicasts, 0 unicasts
  0 input errors, 0 CRC, 0 frame, 0 ignored
  0 runts, 0 giants
  0 packets output, 0 bytes, 0 underruns
  Transmitted 0 broadcasts, 0 multicasts, 0 unicasts
  0 output errors, 0 collisions
```

History

Release version	Command history
08.0.50	This command was introduced.

show interfaces stack-ports

Use the **show interfaces stack-ports** command to display information about the stacking ports for all members in a stack.

Syntax

show interfaces stack-ports

Modes

Privileged EXEC mode

Usage Guidelines

Use the **clear stack ipc** command before issuing the **show stack ipc** command. This helps to ensure that the data are the most recent traffic statistics for the stack.

This command must be executed from active stack controller.

Command Output

The **show interfaces stack-ports** command displays the following information:

Output field	Description
Port	Specifies the stack identification number for this unit
Link	Identifies the configuration for modules on this unit
State	Indicates that a priority has been assigned to this stack unit
Dupl	Indicates whether the port is configured as half- or full-duplex
Speed	Indicates the port speed
Trunk	Indicates whether the port is part of a trunk
Tag	Indicates whether the port is tagged or untagged
P	Specifies port priority
MAC	Provides the MAC address of the port. **NOTE** If a unit is provisional (it is reserved and does not have a physical unit associated with the unit ID), the interface MAC address displayed for the unit is 0000.0000.0000.
Name	Displays the optional name assigned to the port if present

Examples

The following example displays information about the stack-port interfaces.

```
device# show interfaces stack-ports
Port    Link    State   Dupl Speed Trunk Tag Pvid Pri MAC Name
1/2/1   Up      Forward Full 40G   None  No  N/A  0   748e.f8f9.6315
1/2/2   Down    None    None None  None  No  N/A  0   748e.f8f9.6319
1/2/4   Up      Forward Full 40G   None  No  N/A  0   748e.f8f9.6321
1/2/5   Down    None    None None  None  No  N/A  0   748e.f8f9.6325
1/2/6   Down    None    None None  None  No  N/A  0   748e.f8f9.6329
2/2/1   Up      Forward Full 40G   None  No  N/A  0   cc4e.2438.7295
2/2/4   Up      Forward Full 40G   None  No  N/A  0   cc4e.2438.72a1
2/2/5   Down    None    None None  None  No  N/A  0   cc4e.2438.72a5
3/2/1   Up      Forward Full 40G   None  No  N/A  0   cc4e.2438.7515
3/2/2   Down    None    None None  None  No  N/A  0   cc4e.2438.7519
3/2/3   Down    None    None None  None  No  N/A  0   cc4e.2438.751d
3/2/4   Up      Forward Full 40G   None  No  N/A  0   cc4e.2438.7521
```

show interfaces tunnel

Displays tunnel interface information.

Syntax

show interfaces tunnel *tunnel-number*

Parameters

tunnel-number

Specifies the tunnel number. Valid values range from 1 through 72.

Modes

Privileged EXEC mode

Command Output

The **show interfaces tunnel** command displays the following information:

Field	Definition
Hardware is Tunnel	The interface is a tunnel interface.
Tunnel source	The source address for the tunnel.
Tunnel destination	The destination address for the tunnel.
Tunnel mode	The tunnel mode. The gre specifies that the tunnel will use GRE encapsulation (IP protocol 47).
Interface bandwidth	The configured bandwidth on a tunnel interface for routing metric purposes only.
Port name	The port name (if applicable).
Internet address	The internet address.
MTU	The configured path maximum transmission unit.
encapsulation GRE	GRE encapsulation is enabled on the port.
Keepalive	Indicates whether or not GRE link keepalive is enabled.
Path MTU Discovery	Indicates whether or not PMTUD is enabled. If PMTUD is enabled, the MTU value is also displayed.
Path MTU	The PMTU that is dynamically learned.
Age-timer	Indicates the pmtd aging timer configuration in minutes.The default is 10. The range is from 10 - 30.
Path MTU will expire	Indicates the time after which the learned PMTU expires. This line is displayed only when a PMTU is dynamically learned.

Examples

This example displays the GRE tunnel configuration and the pmtd aging timer information..

```
show interfaces tunnel 10
Tunnel10 is up, line protocol is up
  Hardware is Tunnel
  Tunnel source  10.1.41.10
  Tunnel destination is 10.1.14.10
  Tunnel mode gre ip
  Port name is GRE_10_to_VR1_on_ICX_STACK
  Internet address is 10.11.1.1/31, MTU 1476 bytes, encapsulation GRE
  Keepalive is not Enabled
  Path MTU Discovery: Enabled, MTU is 1428 bytes, age-timer: 10 minutes
  Path MTU will expire in 0 minutes 50 secs
```

This example shows information for the configured interface bandwidth value on a tunnel interface.

```
device# show interfaces tunnel 2

Tunnel2 is up, line protocol is up
  Hardware is Tunnel
  Tunnel source  10.70.15.1
  Tunnel destination is 10.70.15.2
  Tunnel mode gre ip
  Interface bandwidth is 2000 kbps
  No port name
  Internet address is: 10.0.0.1/24
  Tunnel TOS 0, Tunnel TTL 255, Tunnel MTU 1476 bytes
  Keepalive is not Enabled

  Tunnel Packet Statistics:
                                  Unicast Packets                    Multicast Packets
       In-Port(s)          [Rcv-from-tnnl    Xmit-to-tnnl]     [Rcv-from-tnnl    Xmit-to-tnnl]
       e1/1/1 - e1/1/24    2224              0                 0                 0
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.

show interfaces ve

Displays Virtual Ethernet (VE) interface information.

Syntax

show interfaces ve *vlan_id*

Parameters

vlan_id

Specifies the configured corresponding VLAN interface.

Modes

Privileged EXEC mode

Examples

This example shows information for the configured bandwidth on a VE interface. In this example the configured interface bandwidth value is 2000 kilobits.

```
device#show interfaces ve 100
Ve100 is up, line protocol is up
  Type is Vlan (Vlan Id: 100)
  Hardware is Virtual Ethernet, address is 748e.f82a.cf00 (bia 748e.f82a.cf00)
  No port name
  Vlan id: 100
  Interface bandwidth is 2000 kbps
 ipv6 address 190::1/64
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.

show ip

Displays global IP configuration information.

Syntax

show ip

Modes

User EXEC mode

Global configuration mode

Usage Guidelines

This command has additional options, which are explained in separate command pages.

Command Output

The **show ip** command displays the following information:

Field	Description
Global settings	
ttl	The Time-To-Live (TTL) for IP packets. The TTL specifies the maximum number of router hops a packet can travel before reaching the device. If the packet TTL value is higher than the value specified in this field, the device drops the packet.
arp-age	The ARP aging period, which specifies how many minutes an inactive ARP entry remains in the ARP cache before the router ages out the entry.
bootp-relay-max-hops	The maximum number of hops away a BootP server can be located from the device and still be used by the router clients for network booting.
router-id	The 32-bit number that uniquely identifies the device. By default, the router ID is the numerically lowest IP interface configured on the router.
enabled	The IP-related protocols that are enabled on the router.
disabled	The IP-related protocols that are disabled on the router.
Static routes	
Index	The row number of this entry in the IP route table.
IP Address	The IP address of the route destination.
Subnet Mask	The network mask for the IP address.
Next Hop Router	The IP address of the router interface to which the device sends packets for the route.
Metric	The cost of the route. Usually, the metric represents the number of hops to the destination.
Distance	The administrative distance of the route. The default administrative distance for static IP routes in RUCKUS ICX devices is 1.
Policies	

Field	Description
Index	The policy number. This is the number you assigned the policy when you configured it.
Action	The action the router takes if a packet matches the comparison values in the policy. The action can be one of the following: • deny: The router drops packets that match this policy. • permit: The router forwards packets that match this policy.
Source	The source IP address the policy matches.
Destination	The destination IP address the policy matches.
Protocol	The IP protocol the policy matches. The protocol can be one of the following: • ICMP • IGMP • IGRP • OSPF • TCP • UDP
Port	The Layer 4 TCP or UDP port the policy checks for in packets. The port can be displayed by its number or, for port types the router recognizes, by the well-known name. For example, TCP port 80 can be displayed as HTTP. **NOTE** This field applies only if the IP protocol is TCP or UDP.
Operator	The comparison operator for TCP or UDP port names or numbers. **NOTE** This field applies only if the IP protocol is TCP or UDP.

Examples

The following example shows sample output of the **show ip** command in which the status of the next hop or ARP port movement syslog message (enabled) is displayed.

```
device(config)# show ip
Global Settings
  ttl: 64, arp-age: 10, bootp-relay-max-hops: 4
  router-id : 10.1.1.1
  enabled : BGP4  UDP-Broadcast-Forwarding  Source-Route  Load-Sharing  RARP  VSRP
  arp-port-move-syslog
  disabled: Route-Only  Directed-Broadcast-Forwarding  IRDP  Proxy-ARP  RIP  OSPF
  VRRP  VRRP-Extended  ICMP-Redirect  add-host-route-first
```

The following example shows sample output of the **show ip** command in which the status of the next hop or ARP port movement syslog message (disabled) is displayed.

```
device(config)# no ip arp port-move-syslog
device(config)# show ip
Global Settings
  ttl: 64, arp-age: 10, bootp-relay-max-hops: 4
  router-id : 10.1.1.1
  enabled : BGP4  UDP-Broadcast-Forwarding  Source-Route  Load-Sharing  RARP  VSRP

  disabled: Route-Only  Directed-Broadcast-Forwarding  IRDP  Proxy-ARP  RIP  OSPF
  VRRP  VRRP-Extended  ICMP-Redirect  add-host-route-first arp-port-move-syslog
```

History

Release	Command History
08.0.70	This command was modified to display the status of the next hop or ARP port movement syslog message (enabled or disabled).

show ip access-lists

Displays IPv4 access control list (ACL) information.

Syntax

show ip access-lists [*acl-num* | *acl-name*]

Parameters

acl-num

Displays the information for the ACL with the specified ACL number.

acl-name

Displays information for the ACL with the specified name.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

ACL configuration mode

Usage Guidelines

From FastIron release 08.0.50, sequence numbers are automatically added to existing ACL rules, in the following manner:

- The first rule within each ACL is numbered 10.
- The sequence number for each succeeding rule is incremented by 10.

Examples

The following example displays sample output of the **show ip access-lists** command.

```
device(config-ext-ipacl-111)# show ip access-lists 111
Extended IP access list 111: 4 entries
10: permit ip host 1.1.1.111 host 2.2.2.111
20: permit ospf any any
30: permit pim any any
40: deny ip 20.20.20.96 0.0.0.15 any
```

History

Release version	Command history
08.0.50	The command was modified to add sequence numbers automatically to existing rules.

show ip access-lists bindings

Displays the current IPv4 ACL-to-interface bindings.

Syntax

show ip access-lists { **bindings** }

Modes

All modes

Examples

The following example shows all IPv4 ACLs with the interface they are bound to and their active direction.

```
device# show ip access-lists bindings
ACL NAME  TARGET                DIRECTION
========= =======               ==========
Acl1      eth 3/1/2             in
Acl2      lag 1                 out
Acl1      ve 10                 in
Acl2      vlan 20               in
Acl3      vlan 20:lag 2         in
Acl4      vlan 20:eth 2/1/1     in
Acl5      ve 10:lag 3           out
Acl5      ve 10:eth 1/1/1       out
Acl7      cpu-ports:unit-active in
```

History

Release version	Command history
08.0.95	This command was introduced.

show ip access-lists brief

Displays a summary of configured IPv4 ACLs.

Syntax

show ip access-lists { **brief** }

Modes

All modes

Examples

The following example shows that four IPv4 ACLs are configured on the device.

```
device# show ip access-lists brief
Standard IP access list 99: 2 entries
Extended IP access list 101: 26 entries
Extended IP access list 199: 3 entries
Extended IP access list acl1: 5 entries
```

History

Release version	Command history
08.0.95	This command was introduced.

show ip arp inspection entries

Displays Address Resolution Protocol (ARP) inspection entries.

Syntax

show ip arp inspection entries [**ip** *ip-address*] [**vrf** *vrf-name*]

Parameters

ip *ip-address*

Displays the ARP inspection entries with a specific IP address.

vrf *vrf-name*

Displays the ARP inspection entries for a non-default VRF instance.

Modes

User EXEC mode

Examples

The following example displays ARP inspection entries.

```
device> show ip arp inspection entries

Total entries               : 2
DHCP Snooping Learnt entries: 1
ARP Learnt entries          : 1
Static entries              : 0
     IP Address      Mac Address    VRF                          Entry Type
     10.177.144.1    02e0.52da.d665 default-vrf                  arp table entry
     1.1.8.197       00c1.0400.0001 default-vrf                  dhcp snoop entry
```

History

Release version	Command history
08.0.61	This command was introduced.
08.0.95	The **vrf** *vrf-name* option was added. The **ethernet** *unit/slot/port* and **lag** *lag-id* options were removed.

show ip bgp

Displays entries in the IPv4 Border Gateway Protocol (BGP4) routing table.

Syntax

show ip bgp

show ip bgp *ip-addr* [*/prefix*]

show ip bgp *ip-addr* [*/prefix*] **longer-prefixes**

Parameters

ipv6-addr/prefix

Specifies the IPv4 address and optional prefix.

longer-prefixes

Filters on prefixes equal to or greater than that specified by *prefix*.

Modes

User EXEC mode

Examples

The following example displays sample output from the **show ip bgp** command.

```
device> show ip bgp
Total number of BGP Routes: 1
Status codes: s suppressed, d damped, h history, * valid, > best, i internal, S stale
Origin codes: i - IGP, e - EGP, ? - incomplete
    Network        Next Hop      Metric  LocPrf   Weight Path
*> 10.1.1.0/24    192.168.1.5    1       100      0      90000 100 200 65535
65536 65537 65538 65539 75000
```

The following example displays sample output from the **show ip bgp** command when an IP address is specified.

```
device> show ip bgp 10.3.4.0

Number of BGP Routes matching display condition : 1
Status codes: s suppressed, d damped, h history, * valid, > best, i internal
Origin codes: i - IGP, e - EGP, ? - incomplete
    Network            Next Hop        Metric LocPrf Weight Path
*>  10.3.4.0/24         192.168.4.106          100    0      65001 4355 1 1221 ?
       Last update to IP routing table: 0h11m38s, 1 path(s) installed:
         Gateway           Port
         192.168.2.1       1/2/1
       Route is advertised to 1 peers:
        10.20.20.2(65300)
```

show ip bgp attribute-entries

Displays BGP4 route-attribute entries that are stored in device memory.

Syntax

show ip bgp attribute-entries

Modes

User EXEC mode

Usage Guidelines

The route-attribute entries table lists the sets of BGP4 attributes that are stored in device memory. Each set of attributes is unique and can be associated with one or more routes. In fact, the device typically has fewer attribute entries than routes. Use this command to view BGP4 route-attribute entries that are stored in device memory.

Command Output

The **show ip bgp attribute-entries** command displays the following information:

Output field	Description
Total number of BGP4 Attribute Entries	The number of routes contained in this BGP4 route table.
Next Hop	The IP address of the next-hop device for routes that have this set of attributes.
Metric	The cost of the routes that have this set of attributes.
Origin	The source of the route information. The origin can be one of the following: • EGP - The routes with these attributes came to BGP4 through EGP. • IGP - The routes with these attributes came to BGP4 through IGP. • INCOMPLETE - The routes came from an origin other than EGP or IGP. For example, they may have been redistributed from OSPF or RIP. When BGP4 compares multiple routes to a destination to select the best route, IGP is preferred over EGP and both are preferred over INCOMPLETE.
Originator	The originator of the route in a route reflector environment.
Cluster List	The route-reflector clusters through which this set of attributes has passed.
Aggregator	Aggregator information: • AS Number shows the AS in which the network information in the attribute set was aggregated. This value applies only to aggregated routes and is otherwise 0. • Router-ID shows the device that originated this aggregator.

Output field	Description
Atomic	Whether the network information in this set of attributes has been aggregated *and* this aggregation has resulted in information loss. • TRUE - Indicates information loss has occurred • FALSE - Indicates no information loss has occurred **NOTE** Information loss under these circumstances is a normal part of BGP4 and does not indicate an error.
Local Pref	The degree of preference for routes that use these attributes relative to other routes in the local AS.
Communities	The communities to which routes with these attributes belong.
AS Path	The autonomous systems through which routes with these attributes have passed. The local AS is shown in parentheses.

Examples

The following example show sample output for the **show ip bgp attribute-entries** command.

```
device> show ip bgp attribute-entries

        Total number of BGP Attribute Entries: 18 (0)
1       Next Hop  :192.168.1.6        MED :1             Origin:INCOMP
        Originator:0.0.0.0            Cluster List:None
        Aggregator:AS Number :0      Router-ID:0.0.0.0     Atomic:None
        Local Pref:100               Communities:Internet
AS Path   :90000 80000 (length 11
)
        Address: 0x10e4e0c4  Hash:489 (0x03028536), PeerIdx 0
        Links: 0x00000000, 0x00000000, nlri: 0x10f4804a
        Reference Counts: 1:0:1, Magic: 51
2       Next Hop  :192.168.1.5        Metric   :1            Origin:INCOMP
        Originator:0.0.0.0            Cluster List:None
        Aggregator:AS Number :0      Router-ID:0.0.0.0       Atomic:None
        Local Pref:100               Communities:Internet
AS Path   :90000 75000 (length 11)
        Address: 0x10e4e062  Hash:545 (0x0301e8f6), PeerIdx 0
        Links: 0x00000000, 0x00000000, nlri: 0x10f47ff0
        Reference Counts: 1:0:1, Magic: 49
```

show ip bgp config

Displays active BGP4 configuration information.

Syntax

show ip bgp config

Modes

User EXEC mode

Examples

The following example displays sample output from the **show ip bgp config** command.

```
device> show ip bgp config

router bgp
  local-as 200
neighbor 10.102.1.1 remote-as 200
neighbor 10.102.1.1 ebgp-multihop
neighbor 10.102.1.1 update-source loopback 1
neighbor 192.168.2.1 remote-as 100
neighbor 10.200.2.2 remote-as 400
neighbor 2001:db8::1:1 remote-as 200
neighbor 2001:db8::1:2 remote-as 400
neighbor 2001:db8::1 remote-as 300

address-family ipv4 unicast
no neighbor 2001:db8::1:1 activate
no neighbor 2001:db8::1:2 activate
no neighbor 2001:db8::1 activate
exit-address-family

address-family ipv6 unicast
redistribute static
neighbor 2001:db8::1:1 activate
neighbor 2001:db8::1:2 activate
neighbor 2001:db8::1 activate
exit-address-family
end of BGP configuration
```

show ip bgp dampened-paths

Displays all BGP4 dampened routes.

Syntax

show ip bgp dampened-paths

Modes

User EXEC mode

Command Output

The **show ip bgp dampened-paths** command displays the following information:

Output field	Description
Status codes	A list of the characters the display uses to indicate the path's status. The status code appears in the left column of the display, to the left of each route. The status codes are described in the command's output. The status column displays a "d" for each dampened route.
Network	The destination network of the route.
From	The IP address of the advertising peer.
Flaps	The number of times the path has flapped.
Since	The amount of time (in hh:mm:ss) since the first flap of this route.
Reuse	The amount of time (in hh:mm:ss) after which the path is available again.
Path	The AS path of the route.

Examples

The following example displays BGP4 paths that have been dampened (suppressed) by route flap dampening.

```
device> show ip bgp dampened-paths

Status Code >:best d:damped h:history *:valid
    Network             From                  Flaps     Since     Reuse     Path
*d     10.5.5.0/24              10.5.5.6                        1     0 :1 :14     0 :2 :20     100
1002 1000
*d     10.6.6.6/32                    10.5.5.6                        1     0 :1 :14     0 :2 :
20     100 1002 1000
```

show ip bgp filtered-routes

Displays BGP4 filtered routes that are received from a neighbor or peer group.

Syntax

show ip bgp filtered-routes [**detail**] [*ip-addr* { **/** *mask* } [**longer-prefixes**] | **as-path-access-list** *name* | **prefix-list** *name*]

Parameters

detail

Displays detailed route information.

ip-addr

Specifies the IPv4 address of the destination network in dotted-decimal notation.

mask

Specifies the IPv4 mask of the destination network in CIDR notation.

longer-prefixes

Specifies all statistics for routes that match the specified route, or that have a longer prefix than the specified route.

as-path-access-list *name*

Specifies an AS-path ACL. The name must be between 1 and 32 ASCII characters in length.

prefix-list *name*

Specifies an IP prefix list. The name must be between 1 and 32 ASCII characters in length.

name

Specifies the name of an AS-path ACL or prefix list.

Modes

User EXEC mode

Examples

The following example displays BGP4 filtered routes.

```
device> show ip bgp filtered-routes
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix             Next Hop        MED       LocPrf     Weight Status
1      10.3.0.0/8          192.168.4.106              100        0      EF
         AS_PATH: 65001 4355 701 80
2      10.4.0.0/8          192.168.4.106              100        0      EF
         AS_PATH: 65001 4355 1
3      10.60.212.0/22      192.168.4.106              100        0      EF
         AS_PATH: 65001 4355 701 1 189
```

show ip bgp flap-statistics

Displays BGP4 route-dampening statistics for all dampened routes with a variety of options.

Syntax

show ip bgp flap-statistics

show ip bgp flap-statistics *ip-addr* { / *mask* } [**longer-prefix**]

show ip bgp flap-statistics as-path-filter *name*

show ip bgp flap-statistics neighbor *ip-addr*

show ip bgp flap-statistics regular-expression *name*

Parameters

ip-addr
IPv4 address of a specified route in dotted-decimal notation.

mask
IPv4 mask of a specified route in CIDR notation.

longer-prefixes
Displays statistics for routes that match the specified route or have a longer prefix than the specified route.

as-path-filter *name*
Specifies an AS-path filter.

neighbor
Displays flap statistics only for routes learned from the specified neighbor.

ip-addr
IPv4 address of the neighbor.

regular-expression
Specifies a regular expression in the display output on which to filter.

name
Name of an AS-path filter or regular expression.

Modes

User EXEC mode

Command Output

The **show ip bgp flap-statistics** command displays the following information:

Output field	Description
Total number of flapping routes	The total number of routes in the BGP4 route table that have changed state and have been marked as flapping routes.

Output field	Description
Status code	Indicates the dampening status of the route, which can be one of the following: • > - This is the best route among those in the BGP4 route table to the route destination. • d - This route is currently dampened, and unusable. • h - The route has a history of flapping and is unreachable now. • * - The route has a history of flapping but is currently usable.
Network	The destination network of the route.
From	The neighbor that sent the route to the device.
Flaps	The number of flaps the route has experienced.
Since	The amount of time since the first flap of this route.
Reuse	The amount of time remaining until this route will be un-suppressed and can be used again.
Path	Shows the AS-path information for the route.

Examples

The following example displays route dampening statistics.

```
device> show ip bgp flap-statistics
Total number of flapping routes: 414
    Status Code  >:best d:damped h:history *:valid
    Network            From         Flaps Since    Reuse    Path
h>  10.50.206.0/23   10.90.213.77   1     0 :0 :13 0 :0 :0  65001 4355 1 701
h>  10.255.192.0/20  10.90.213.77   1     0 :0 :13 0 :0 :0  65001 4355 1 7018
h>  10.252.165.0/24  10.90.213.77   1     0 :0 :13 0 :0 :0  65001 4355 1 7018
h>  10.50.208.0/23   10.90.213.77   1     0 :0 :13 0 :0 :0  65001 4355 1 701
h>  10.33.0.0/16     10.90.213.77   1     0 :0 :13 0 :0 :0  65001 4355 1 701
*>  10.17.220.0/24   10.90.213.77   1     0 :1 :4  0 :0 :0  65001 4355 701 62
```

show ip bgp ipv6

Displays IPv6 unicast information.

Syntax

show ip bgp ipv6 neighbors

show ip bgp ipv6 neighbors *ip-addr* **advertised-routes** [**detail**] [*ipv6 address /mask*]

show ip bgp ipv6 neighbors *ip-addr* **flap-statistics**

show ip bgp ipv6 neighbors *ip-addr* **last-packet-with-error** [**decode**]

show ip bgp ipv6 neighbors *ip-addr* **received** [**prefix-filter**]

show ip bgp ipv6 neighbors *ip-addr* **received-routes** [**detail**]

show ip bgp ipv6 neighbors *ip-addr* **rib-out-routes** [**detail**] [*ipv6 address /mask*]

show ip bgp ipv6 neighbors *ip-addr* **routes**

show ip bgp ipv6 neighbors *ip-addr* **routes** { **best** | **not-installed-best** | **unreachable** }

show ip bgp ipv6 neighbors *ip-addr* **routes detail** { **best** | **not-installed-best** | **unreachable** }

show ip bgp ipv6 neighbors *ip-addr* **routes-summary**

show ip bgp ipv6 neighbors last-packet-with-error

show ip bgp ipv6 neighbors routes-summary

show ip bgp ipv6 summary

Parameters

neighbors
Specifies a neighbor.

ip-addr
IPv4 address of a neighbor in dotted-decimal notation.

advertised-routes
Specifies the routes that the device has advertised to the neighbor during the current BGP4 session.

detail
Specifies detailed information.

ipv6 address /mask
Specifies an IPv6 address and mask.

flap-statistics
Specifies the route flap statistics for routes received from or sent to a BGP4 neighbor.

last-packet-with-error
Specifies the last packet with an error.

decode
Decodes the last packet that contained an error from any of a device's neighbors.

received

Specifies Outbound Route Filters (ORFs) received from BGP4 neighbors of the device.

prefix-filter

Displays the results for ORFs that are prefix-based.

received-routes

Specifies all route information received in route updates from BGP4 neighbors of the device since the soft-reconfiguration feature was enabled.

rib-out-routes

Displays information about the current BGP4 Routing Information Base (Adj-RIB-Out) for specific neighbors and specific destination networks.

routes

Displays a variety of route information received in UPDATE messages from BGP4 neighbors.

best

Displays routes received from the neighbor that are the best BGP4 routes to their destination.

not-installed-best

Displays routes received from the neighbor that are the best BGP4 routes to their destination but were not installed in the route table because the device received better routes from other sources.

unreachable

Displays routes that are unreachable because the device does not have a valid RIP, OSPF, or static route to the next hop.

routes-summary

Displays all route information received in UPDATE messages from BGP4 neighbors.

summary

Displays summarized IPv6 unicast information.

Modes

User EXEC mode

Examples

The following example displays summarized IPv6 unicast information.

```
device> show ip bgp ipv6 summary
BGP4 Summary
Router ID: 10.1.1.1 Local AS Number: 1
Confederation Identifier: not configured
Confederation Peers:
Maximum Number of IP ECMP Paths Supported for Load Sharing: 1
Number of Neighbors Configured: 1, UP: 1
Number of Routes Installed: 1, Uses 86 bytes
Number of Routes Advertising to All Neighbors: 0 (0 entries)
Number of Attribute Entries Installed: 1, Uses 90 bytes
Neighbor Address AS# State Time Rt:Accepted Filtered Sent ToSend
192.168.1.2 2 ESTAB 0h 1m51s 1 0 0 0
```

The following example displays IPv6 unicast device information with respect to IPv4 neighbors.

```
device(config-bgp)# show ip bgp ipv6 neighbors
Total number of BGP Neighbors: 1
1 IP Address: 192.168.1.2, AS: 2 (EBGP), RouterID: 10.1.1.2, VRF: default-vrf
State: ESTABLISHED, Time: 0h8m33s, KeepAliveTime: 60, HoldTime: 180
KeepAliveTimer Expire in 17 seconds, HoldTimer Expire in 135 seconds
UpdateSource: Loopback 1
RefreshCapability: Received
.......
Neighbor NLRI Negotiation:
Peer Negotiated IPV6 unicast capability
Peer configured for IPV6 unicast Routes
Neighbor AS4 Capability Negotiation:
TCP Connection state: ESTABLISHED, flags:00000033 (0,0)
```

show ip bgp neighbors

Displays configuration information and statistics for BGP4 neighbors of the device.

Syntax

show ip bgp neighbors [*ip-addr*]

show ip bgp neighbors last-packet-with-error

show ip bgp neighbors routes-summary

Parameters

ip-addr

Specifies the IPv4 address of a neighbor in dotted-decimal notation.

last-packet-with-error

Displays the last packet with an error.

routes-summary

Displays routes received, routes accepted, number of routes advertised by peer, and so on.

Modes

User EXEC mode

Usage Guidelines

Output shows all configured parameters for the neighbors. Only the parameters whose values differ from defaults are shown.

Command Output

The **show ip bgp neighbors** command displays the following information:

Output field	Description
Total Number of BGP4 Neighbors	The number of BGP4 neighbors configured.
IP Address	The IP address of the neighbor.
AS	The AS the neighbor is in.
EBGP or IBGP	Whether the neighbor session is an IBGP session, an EBGP session, or a confederation EBGP session: • EBGP - The neighbor is in another AS. • EBGP_Confed - The neighbor is a member of another sub-AS in the same confederation. • IBGP - The neighbor is in the same AS.
RouterID	The neighbor device ID.
Description	The description you gave the neighbor when you configured it on the device.
Local AS	The value (if any) of the Local AS configured.

Output field	Description
State	The state of the session with the neighbor. The states are from the device perspective, not the neighbor perspective. The state values are based on the BGP4 state machine values described in RFC 1771 and can be one of the following for each device: • IDLE - The BGP4 process is waiting to be started. Usually, enabling BGP4 or establishing a neighbor session starts the BGP4 process. A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • ADMND - The neighbor has been administratively shut down. A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • CONNECT - BGP4 is waiting for the connection process for the TCP neighbor session to be completed. • ACTIVE - BGP4 is waiting for a TCP connection from the neighbor. **NOTE** If the state frequently changes between CONNECT and ACTIVE, there may be a problem with the TCP connection. • OPEN SENT - BGP4 is waiting for an Open message from the neighbor. • OPEN CONFIRM - BGP4 has received an OPEN message from the neighbor and is now waiting for either a KEEPALIVE or NOTIFICATION message. If the device receives a KEEPALIVE message from the neighbor, the state changes to Established. If the message is a NOTIFICATION, the state changes to Idle. • ESTABLISHED - BGP4 is ready to exchange UPDATE messages with the neighbor. If there is more BGP4 data in the TCP receiver queue, a plus sign (+) is also displayed. **NOTE** If you display information for the neighbor using the **show ip bgp neighbor***ip-addr* command, the TCP receiver queue value will be greater than 0.
Time	The amount of time this session has been in the current state.
KeepAliveTime	The keep alive time, which specifies how often this device sends keepalive messages to the neighbor.
HoldTime	The hold time, which specifies how many seconds the device will wait for a keepalive or update message from a BGP4 neighbor before deciding that the neighbor is not operational.
PeerGroup	The name of the peer group the neighbor is in, if applicable.
Multihop-EBGP	Whether this option is enabled for the neighbor.
RouteReflectorClient	Whether this option is enabled for the neighbor.
SendCommunity	Whether this option is enabled for the neighbor.
NextHopSelf	Whether this option is enabled for the neighbor.
DefaultOriginate	Whether this option is enabled for the neighbor.
MaximumPrefixLimit	Maximum number of prefixes the device will accept from this neighbor.
RemovePrivateAs	Whether this option is enabled for the neighbor.
RefreshCapability	Whether this device has received confirmation from the neighbor that the neighbor supports the dynamic refresh capability.
CooperativeFilteringCapability	Whether the neighbor is enabled for cooperative route filtering.

Output field	Description
Distribute-list	Lists the distribute list parameters, if configured.
Filter-list	Lists the filter list parameters, if configured.
Prefix-list	Lists the prefix list parameters, if configured.
Route-map	Lists the route map parameters, if configured.
Messages Sent	The number of messages this device has sent to the neighbor. The display shows statistics for the following message types: • Open • Update • KeepAlive • Notification • Refresh-Req
Messages Received	The number of messages this device has received from the neighbor. The message types are the same as for the Message Sent field.
Last Update Time	Lists the last time updates were sent and received for the following: • NLRIs • Withdraws
Last Connection Reset Reason	The reason the previous session with this neighbor ended. The reason can be one of the following: Reasons described in the BGP4 specifications: • Message Header Error • Connection Not Synchronized • Bad Message Length • Bad Message Type • OPEN Message Error • Unsupported Version Number • Bad Peer AS Number • Bad BGP4 Identifier • Unsupported Optional Parameter • Authentication Failure • Unacceptable Hold Time • Unsupported Capability • UPDATE Message Error • Malformed Attribute List • Unrecognized Well-known Attribute • Missing Well-known Attribute • Attribute Flags Error • Attribute Length Error • Invalid ORIGIN Attribute • Invalid NEXT_HOP Attribute • Optional Attribute Error • Invalid Network Field • Malformed AS_PATH • Hold Timer Expired • Finite State Machine Error • Rcv Notification

Output field	Description
Last Connection Reset Reason (cont.)	Reasons specific to the RUCKUS implementation: • Reset All Peer Sessions • User Reset Peer Session • Port State Down • Peer Removed • Peer Shutdown • Peer AS Number Change • Peer AS Confederation Change • TCP Connection KeepAlive Timeout • TCP Connection Closed by Remote • TCP Data Stream Error Detected
Notification Sent	If the device receives a NOTIFICATION message from the neighbor, the message contains an error code corresponding to one of the following errors. Some errors have subcodes that clarify the reason for the error. Where applicable, the subcode messages are listed underneath the error code messages. • Message Header Error: – Connection Not Synchronized – Bad Message Length – Bad Message Type – Unspecified • Open Message Error: – Unsupported Version – Bad Peer As – Bad BGP4 Identifier – Unsupported Optional Parameter – Authentication Failure – Unacceptable Hold Time – Unspecified • Update Message Error: – Malformed Attribute List – Unrecognized Attribute – Missing Attribute – Attribute Flag Error – Attribute Length Error – Invalid Origin Attribute – Invalid NextHop Attribute – Optional Attribute Error – Invalid Network Field – Malformed AS Path – Unspecified • Hold Timer Expired • Finite State Machine Error • Cease • Unspecified
Notification Received	Refer to details for the field Notification Sent.
AO Keychain name	Name of the TCP keychain (AO) used for authentication

Output field	Description
TCP Connection state	The state of the connection with the neighbor. The connection can have one of the following states: • LISTEN - Waiting for a connection request. • SYN-SENT - Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED - Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED - Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1 - Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2 - Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT - Waiting for a connection termination request from the local user. • CLOSING - Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK - Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT - Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED - There is no connection state.
TCP Keychain name	Name of active TCP keychain used for TCP segment authentication
TCP-AO Enabled YES/NO	Indicates whether TCP keychain authentication is enabled.
TCP-AO in use YES/NO	Indicates whether TCP keychain authentication is being used.
Keychain valid YES/NO	Indicates whether there is a valid keychain in use.
No of segments dropped	Displays the number of segments dropped because they failed TCP authentication.
Send-Active-Key	Provides details on the TCP authentication send key associated with the active keychain: Key-Id Crypto Algorithm (for example, AES-128-CMAC or HMAC-SHA-1) Send-id - Configured identifier sent in outgoing TCP segments Recv-id - Configured identifier used to compare to send-id in received segments Include-tcp-options (YES/NO) - Specifies whether or not to include TCP options in calculating the Message Authentication Code (MAC) for a TCP segment Accept-ao-mistmatch (YES/NO) - Specifies whether TCP segments are accepted or dropped when TCP peers do not have matching TCP authentication support

Output field	Description
Recv-Active-Key	Provides details on the TCP authentication receive key associated with the active keychain: Key-Id Crypto Algorithm (for example, AES-128-CMAC or HMAC-SHA-1) Send-id - Configured identifier sent in outgoing TCP segments Recv-id - Configured identifier used to compare to send-id in received segments Include-tcp-options (YES/NO) - Specifies whether or not to include TCP options in calculating the Message Authentication Code (MAC) for a TCP segment Accept-ao-mistmatch (YES/NO) - Specifies whether TCP segments are accepted or dropped when TCP peers do not have matching TCP authentication support
Maximum segment size	Displays maximum size for TCP segments.
TTL check: value	Diplays TTL value.
Byte Sent	The number of bytes sent.
Byte Received	The number of bytes received.
Local host	The IP address of the device.
Local port	The TCP port the device is using for the BGP4 TCP session with the neighbor.
Remote host	The IP address of the neighbor.
Remote port	The TCP port the neighbor is using for the BGP4 TCP session with the device.
ISentSeq	The initial send sequence number for the session.
SendNext	The next sequence number to be sent.
TotUnAck	The number of sequence numbers sent by the device that have not been acknowledged by the neighbor.
TotSent	The number of sequence numbers sent to the neighbor.
ReTrans	The number of sequence numbers that the device retransmitted because they were not acknowledged.
UnAckSeq	The current acknowledged sequence number.
IRcvSeq	The initial receive sequence number for the session.
RcvNext	The next sequence number expected from the neighbor.
SendWnd	The size of the send window.
TotalRcv	The number of sequence numbers received from the neighbor.
DupliRcv	The number of duplicate sequence numbers received from the neighbor.
RcvWnd	The size of the receive window.
SendQue	The number of sequence numbers in the send queue.
RcvQue	The number of sequence numbers in the receive queue.
CngstWnd	The number of times the window has changed.

Examples

The following example shows sample output from the **show ip bgp neighbors** command.

```
Idevice# show ip bgp neighbors
    Total number of BGP Neighbors:3
1   IP Address: 17.1.1.1, AS: 1 (IBGP), RouterID: 3.1.1.1, VRF: default-vrf
    State: ESTABLISHED, Time: 1d22h42m4s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 4 seconds, HoldTimer Expire in 23 seconds
    Minimal Route Advertisement Interval: 0 seconds
       PeerGroup: p1
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
           afi/safi 2/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
           afi/safi 2/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       2       16729     0            0
       Received: 1       2       18097     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                   Tx: ---       ---           Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV4  unicast  capability
      Peer Negotiated IPV6 unicast  capability
      Peer configured for IPV4 unicast  Routes
      Peer configured for IPV6 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 3, Use Count: 6
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   317970, Received: 343962
       Local host:  17.1.1.2, Local  Port: 8003
       Remote host: 17.1.1.1, Remote Port: 179
       ISentSeq:   17564913  SendNext:   17882884  TotUnAck:          0
       TotSent:      317971  ReTrans:          40  UnAckSeq:   17882884
       IRcvSeq:   153787685  RcvNext:   154131648  SendWnd:       16365
       TotalRcv:     343963  DupliRcv:       1083  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1439
```

The following example shows sample output from the show ip bgp neighbors command when an IP address is specified.

```
device# show ip bgp neighbors 17.1.1.1
1   IP Address: 17.1.1.1, AS: 1 (IBGP), RouterID: 3.1.1.1, VRF: default-vrf
    State: ESTABLISHED, Time: 1d22h42m42s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 9 seconds, HoldTimer Expire in 21 seconds
    Minimal Route Advertisement Interval: 0 seconds
       PeerGroup: p1
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
           afi/safi 2/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
           afi/safi 2/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       2       16733     0            0
       Received: 1       2       18101     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                  Tx: ---        ---           Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV4  unicast  capability
      Peer Negotiated IPV6 unicast  capability
      Peer configured for IPV4 unicast  Routes
      Peer configured for IPV6 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 3, Use Count: 6
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   318046, Received: 344038
       Local host:  17.1.1.2, Local  Port: 8003
       Remote host: 17.1.1.1, Remote Port: 179
       ISentSeq:   17564913  SendNext:   17882960  TotUnAck:          0
       TotSent:      318047  ReTrans:          40  UnAckSeq:   17882960
       IRcvSeq:   153787685  RcvNext:   154131724  SendWnd:       16365
       TotalRcv:     344039  DupliRcv:       1083  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1439
```

History

Release version	Command history
08.0.90	This command was modified to display BGP BFD session information for neighbors.
08.0.92a	The output for this command was modified so that the MD5 password is not displayed in clear text when **enable password-display** is configured.
09.0.10	The output for this command was modified to include TCP keychain authentication option (AO) information.

show ip bgp neighbors advertised-routes

Displays the routes that the device has advertised to the neighbor during the current BGP4 session.

Syntax

show ip bgp neighbors *ip-addr* **advertised-routes** [**detail** | **/** *mask-bits*]

Parameters

ip-addr

Specifies the IPv4 address of a neighbor in dotted-decimal notation.

detail

Specifies detailed information.

mask-bits

Specifies the number of mask bits in CIDR notation.

Modes

User EXEC mode

Examples

The following example displays the routes the device has advertised to a specified neighbor.

```
device> show ip bgp neighbors 192.168.4.211 advertised-routes

       There are 2 routes advertised to neighbor 192.168.4.211
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Network        Next Hop       Metric   LocPrf   Weight   Status
1      10.102.0.0/24  192.168.2.102   12               32768    BL
2      10.200.1.0/24  192.168.2.102   0                32768    BL
```

show ip bgp neighbors flap-statistics

Displays the route flap statistics for routes received from or sent to a BGP4 neighbor.

Syntax

show ip bgp neighbors *ip-addr* **flap-statistics**

Parameters

ip-addr

IPv4 address of a neighbor in dotted-decimal notation.

Modes

User EXEC mode

Examples

The following example displays route flap dampening information for a specified BGP4 neighbor.

```
device> show ipv6 bgp neighbors 10.5.5.6 flap-statistics

Total number of flapping routes: 5
```

show ip bgp neighbors last-packet-with-error

Displays the last packets with an error from BGP4 neighbors of the device.

Syntax

show ip bgp neighbors *ip-addr* **last-packet-with-error** [**decode**]

Parameters

ip-addr

IPv4 address of a neighbor in dotted-decimal notation.

decode

Decodes the last packet that contained an error from any of a device's neighbors.

Modes

User EXEC mode

Examples

The following example shows how to display the last packets with an error from BGP4 neighbors of the device.

```
device> show ip bgp neighbors 10.1.1.2 last-packet-with-error
```

show ip bgp neighbors received

Displays Outbound Route Filters (ORFs) received from BGP4 neighbors of the device.

Syntax

show ip bgp neighbors *ip-addr* **received** { **extended-community** | **prefix-filter** }

Parameters

ip-addr

Specifies the IPv4 address of a neighbor in dotted-decimal notation.

extended-community

Displays the results for ORFs that use the BGP Extended Community Attribute.

prefix-filter

Displays the results for ORFs that are prefix-based.

Modes

User EXEC mode

Examples

The following example displays sample output for the **show ip bgp neighbors received** command when the **prefix-filter** keyword is used.

```
device> show ip bgp neighbor 10.10.10.1 received prefix-filter

ip prefix-list 10.10.10.1: 4 entries
     seq 5 permit 10.10.0.0/16 ge 18 le 28
     seq 10 permit 10.20.10.0/24
     seq 15 permit 10.0.0.0/8 le 32
     seq 20 permit 10.10.0.0/16 ge 18
```

show ip bgp neighbors received-routes

Lists all route information received in route updates from BGP4 neighbors of the device since the soft-reconfiguration feature was enabled.

Syntax

show ip bgp neighbors *ip-addr* **received-routes** [**detail**]

Parameters

ip-addr

Specifies the IPv4 address of a neighbor in dotted-decimal notation.

detail

Displays detailed route information.

Modes

User EXEC mode

Examples

The following example displays the details of route updates.

```
device> show ip bgp neighbor 10.168.4.106 received-routes

       There are 97345 received routes from  neighbor 10.168.4.106
Searching for matching routes, use ^C to quit...
tatus A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH S:SUPPRESSED F:FILTEREDtatus A:AGGREGATE B:BEST
b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH S:SUPPRESSED F:FILTERED
       Prefix             Next Hop        MED     LocPrf    Weight Status
1      10.3.0.0/8          10.168.4.106            100       0      BE
         AS_PATH: 65001 4355 701 8
2      10.4.0.0/8          10.168.4.106            100       0      BE
         AS_PATH: 65001 4355 1
3      10.60.212.0/22      10.168.4.106            100       0      BE
         AS_PATH: 65001 4355 701 1 189
4      10.6.0.0/8          10.168.4.106            100       0      BE
```

show ip bgp neighbors rib-out-routes

Displays information about the current BGP4 Routing Information Base (Adj-RIB-Out) for specific neighbors and specific destination networks.

Syntax

show ip bgp neighbors *ip-addr* **rib-out-routes** [**detail**] [*ip-addr* [**/** *mask*]]

Parameters

ip-addr

Specifies the IPv4 address of a neighbor in dotted-decimal notation.

last-packet-with-error

Displays the last packet with an error.

routes-summary

Displays routes received, routes accepted, number of routes advertised by peer, and so on.

Modes

User EXEC mode

Examples

The following example shows information about the routes that the device either has most recently sent, or is about to send, to a specified neighbor and a specified destination network.

```
device> show ip bgp neighbor 192.168.4.211 rib-out-routes 192.168.1.0/24

Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix             Next Hop        Metric     LocPrf     Weight Status
1      10.200.1.0/24       0.0.0.0         0          101        32768  BL
```

show ip bgp neighbors routes

Lists a variety of route information received in UPDATE messages from BGP4 neighbors.

Syntax

show ip bgp neighbors *ip-addr* **routes**

show ip bgp neighbors *ip-addr* **routes** { **best** | **not-installed-best** | **unreachable** }

show ip bgp neighbors *ip-addr* **routes detail** { **best** | **not-installed-best** | **unreachable** }

Parameters

ip-addr

IPv4 address of a neighbor in dotted-decimal notation.

best

Displays routes received from the neighbor that are the best BGP4 routes to their destination.

not-installed-best

Displays routes received from the neighbor that are the best BGP4 routes to their destination but were not installed in the route table because the device received better routes from other sources.

unreachable

Displays routes that are unreachable because the device does not have a valid RIP, OSPF, or static route to the next hop.

Modes

User EXEC mode

Examples

The following example shows sample output for the **show ip bgp neighbors routes** command.

```
device> show ip bgp neighbors 192.168.4.106 routes

       There are 97345 received routes from  neighbor 192.168.4.106
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix             Next Hop        MED    LocPrf    Weight Status
1      10.3.0.0/8          192.168.4.106          100       0      BE
         AS_PATH: 65001 4355 701 80
2      10.4.0.0/8          192.168.4.106          100       0      BE
         AS_PATH: 65001 4355 1
3      10.60.212.0/22      192.168.4.106          100       0      BE
         AS_PATH: 65001 4355 701 1 189
4      10.6.0.0/8          192.168.4.106                    0      BE
...
```

show ip bgp neighbors routes-summary

Lists all route information received in UPDATE messages from BGP4 neighbors.

Syntax

show ip bgp neighbors *ip-addr* **routes-summary**

Parameters

ip-addr

IPv4 address of a neighbor in dotted-decimal notation.

Modes

User EXEC mode

Command Output

The **show ip bgp neighbors routes-summary** command displays the following information:

Output field	Description
IP Address	The IP address of the neighbor.
Routes Received	How many routes the device has received from the neighbor during the current BGP4 session: • Accepted or Installed - Number of received routes the device accepted and installed in the BGP4 route table. • Filtered or Kept - Number of routes that were filtered out, but were retained in memory for use by the soft reconfiguration feature. • Filtered - Number of received routes filtered out.
Routes Selected as BEST Routes	The number of routes that the device selected as the best routes to their destinations.
BEST Routes not Installed in IP Forwarding Table	The number of routes received from the neighbor that are the best BGP4 routes to their destinations, but were not installed in the IP route table because the device received better routes from other sources (such as OSPF, RIP, or static IP routes).
Unreachable Routes	The number of routes received from the neighbor that are unreachable because the device does not have a valid RIP, OSPF, or static route to the next-hop.
History Routes	The number of routes that are down but are being retained for route flap dampening purposes.
NLRIs Received in Update Message	The number of routes received in Network Layer Reachability (NLRI) format in UPDATE messages: • Withdraws - Number of withdrawn routes the device has received. • Replacements - Number of replacement routes the device has received.

Output field	Description
NLRIs Discarded due to	Indicates the number of times the device discarded an NLRI for the neighbor due to the following reasons: • Maximum Prefix Limit - The configured maximum prefix amount had been reached. • AS Loop - An AS loop occurred. An AS loop occurs when the BGP4 AS-path attribute contains the local AS number. • maxas-limit aspath - The number of route entries discarded because the AS path exceeded the configured maximum length or exceeded the internal memory limits. • Invalid Nexthop - The next-hop value was not acceptable. • Duplicated Originator_ID - The originator ID was the same as the local device ID. • Cluster_ID - The cluster list contained the local cluster ID, or the local device ID if the cluster ID is not configured.
Routes Advertised	The number of routes the device has advertised to this neighbor: • To be Sent - The number of routes queued to send to this neighbor. • To be Withdrawn - The number of NLRIs for withdrawing routes the device has queued to send to this neighbor in UPDATE messages.
NLRIs Sent in Update Message	The number of NLRIs for new routes the device has sent to this neighbor in UPDATE messages: • Withdraws - Number of routes the device has sent to the neighbor to withdraw. • Replacements - Number of routes the device has sent to the neighbor to replace routes the neighbor already has.
Peer Out of Memory Count for	Statistics for the times the device has run out of BGP4 memory for the neighbor during the current BGP4 session: • Receiving Update Messages - The number of times UPDATE messages were discarded because there was no memory for attribute entries. • Accepting Routes (NLRI) - The number of NLRIs discarded because there was no memory for NLRI entries. This count is not included in the Receiving Update Messages count. • Attributes - The number of times there was no memory for BGP4 attribute entries. • Outbound Routes (RIB-out) - The number of times there was no memory to place a "best" route into the neighbor route information base (Adj-RIB-Out) for routes to be advertised.

Examples

The following example displays route summary information received in UPDATE messages.

```
device> show ip bgp neighbor 10.168.4.211 routes-summary

1   IP Address: 10.168.4.211
Routes Accepted/Installed:1,  Filtered/Kept:11,  Filtered:11
   Routes Selected as BEST Routes:1
      BEST Routes not Installed in IP Forwarding Table:0
   Unreachable Routes (no IGP Route for NEXTHOP):0
   History Routes:0

NLRIs Received in Update Message:24,  Withdraws:0 (0),  Replacements:1
   NLRIs Discarded due to
      Maximum Prefix Limit:0, AS Loop:0
      Invalid Nexthop:0, Invalid Nexthop Address:0.0.0.0
      Duplicated Originator_ID:0, Cluster_ID:0

Routes Advertised:0,  To be Sent:0,  To be Withdrawn:0
NLRIs Sent in Update Message:0,  Withdraws:0,  Replacements:0

Peer Out of Memory Count for:
   Receiving Update Messages:0, Accepting Routes(NLRI):0
   Attributes:0, Outbound Routes(RIB-out):0
```

show ip bgp peer-group

Displays peer-group information.

Syntax

show ip bgp peer-group *peer-group-name*

Parameters

peer-group-name

Specifies a peer group name.

Modes

User EXEC mode

Usage Guidelines

Only the parameters that have values different from their defaults are listed.

Examples

The following example shows sample output from the **show ip bgp peer-group** command.

```
device> show ip bgp peer-group pg1
1   BGP peer-group is pg
    Description: peer group abc
       SendCommunity: yes
       NextHopSelf: yes
       DefaultOriginate: yes
    Members:
       IP Address: 10.168.10.10, AS: 65111
```

show ip bgp routes

Displays statistics for the routes in the BGP4 route table of a device.

Syntax

show ip bgp routes [**detail**] [*num* | *ip-address/prefix* | **age** *num* | **as-path-access-list** *name* | **as-path-filter** *number* | **best** | **cidr-only** | **community-access-list** *name* | **community-filter** *number* | **community-reg-expression** *expression* | **local** | **neighbor** *ip-addr* | **nexthop** *ip-addr* | **no-best** | **not-installed-best** | **prefix-list** *string* | **regular-expression** *name* | **route-map** *name* | **summary** | **unreachable**]

Parameters

detail
Displays detailed information.

num
Table entry at which the display starts. For example, if you want to list entries beginning with table entry 100, specify 100.

ip-address/prefix
Specifies an IP address and prefix.

age *num*
Displays BGP4 route information that is filtered by age.

as-path-access-list *name*
Displays BGP4 route information that is filtered by autonomous system (AS)-path access control list (ACL).

as-path-filter *number*
Displays BGP4 route information that is filtered using the specified AS-path filter.

best
Displays BGP4 route information that the device selected as best routes.

cidr-only
Displays BGP4 routes whose network masks do not match their class network length.

community-access-list *name*
Displays BGP4 route information for an AS-path community access list.

community-filter *number*
Displays BGP4 route information that matches a specific community filter.

community-reg-expression *expression*
Displays BGP4 route information for an ordered community list regular expression.

local
Displays BGP4 route information about selected local routes.

neighbor *ip-addr*
Displays BGP4 route information about selected BGP neighbors.

nexthop *ip-addr*
Displays BGP4 route information about routes that are received from the specified next hop.

no-best
Displays BGP4 route information that the device selected as not best routes.

not-installed-best
Displays BGP4 route information about best routes that are not installed.

prefix-list *string*
Displays BGP4 route information that is filtered by a prefix list.

regular-expression *name*
Displays BGP4 route information about routes that are associated with the specified regular expression.

route-map *name*
Displays BGP4 route information about routes that use the specified route map.

summary
Displays BGP4 summary route information.

unreachable
Displays BGP4 route information about routes whose destinations are unreachable through any of the BGP4 paths in the BGP4 route table.

Modes

User EXEC mode

Command Output

The **show ip bgp routes** command displays the following information:

Output field	Description
Total number of BGP4 routes (NLRIs) Installed	Number of BGP4 routes the device has installed in the BGP4 route table.
Distinct BGP4 destination networks	Number of destination networks the installed routes represent. The BGP4 route table can have multiple routes to the same network.
Filtered BGP4 routes for soft reconfig	Number of route updates received from soft-reconfigured neighbors or peer groups that have been filtered out but retained.
Routes originated by this device	Number of routes in the BGP4 route table that this device originated.
Routes selected as BEST routes	Number of routes in the BGP4 route table that this device has selected as the best routes to the destinations.
BEST routes not installed in IP forwarding table	Number of BGP4 routes that are the best BGP4 routes to their destinations but were not installed in the IP route table because the device received better routes from other sources (such as OSPF, RIP, or static IP routes).
Unreachable routes (no IGP route for NEXTHOP)	Number of routes in the BGP4 route table whose destinations are unreachable because the next-hop is unreachable.
IBGP routes selected as best routes	Number of "best" routes in the BGP4 route table that are IBGP routes.
EBGP routes selected as best routes	Number of "best" routes in the BGP4 route table that are EBGP routes.

Examples

The following example shows sample output from the **show ip bgp routes** command.

```
device> show ip bgp routes
Total number of BGP Routes: 97371
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix             Next Hop        MED       LocPrf     Weight Status
1      10.3.0.0/8          192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 701 80
2      10.4.0.0/8          192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 1
3      10.60.212.0/22      192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 701 1 189
4      10.6.0.0/8          192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 3356 7170 1455
5      10.8.1.0/24         192.168.4.106   0          100        0      BE
         AS_PATH: 65001
```

The following example shows sample output from the **show ip bgp routes** command when the **best** keyword is used.

```
device> show ip bgp routes best
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix             Next Hop        MED       LocPrf     Weight Status
1      10.3.0.0/8          192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 701 80
2      10.4.0.0/8          192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 1
3      10.60.212.0/22      192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 701 1 189
4      10.6.0.0/8          192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 3356 7170 1455
5      10.2.0.0/16         192.168.4.106              100        0      BE
         AS_PATH: 65001 4355 701
…
```

The following example shows sample output from the **show ip bgp routes** command when the **detail** keyword is used.

```
device> show ip bgp routes detail

Number of BGP Routes matching display condition : 1
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
1       Prefix: 10.5.5.5/32,  Status: BE,  Age: 0h2m10s
         NEXT_HOP: 10.0.0.1, Metric: 0, Learned from Peer: 10.0.0.1 (3)
          LOCAL_PREF: 100,  MED: none,  ORIGIN: igp,  Weight: 0
         AS_PATH: 3
            Adj_RIB_out count: 2,  Admin distance 20
       Last update to IP routing table: 0h2m10s, 1 path(s) installed:
       Route is advertised to 2 peers:
        10.0.0.3(65002)                       10.0.0.5(65002)
```

The following example shows sample output from the **show ip bgp routes** command when the **summary** keyword is used.

```
device> show ip bgp routes summary

  Total number of BGP routes (NLRIs) Installed     : 20
  Distinct BGP destination networks                : 20
  Filtered BGP routes for soft reconfig            : 100178
  Routes originated by this router                 : 2
  Routes selected as BEST routes                   : 19
  BEST routes not installed in IP forwarding table : 1
  Unreachable routes (no IGP route for NEXTHOP)    : 1
  IBGP routes selected as best routes              : 0
  EBGP routes selected as best routes              : 17
```

The following example shows sample output from the **show ip bgp routes** command when the **unreachable** keyword is used.

```
device> show ip bgp routes unreachable

Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix      Next Hop        Metric     LocPrf     Weight Status
1      10.8.8.0/24  192.168.5.1     0          101        0
         AS_PATH: 65001 4355 1
```

The following example shows sample output from the **show ip bgp routes** command when an IP address is specified.

```
device> show ip bgp route 10.3.4.0

Number of BGP Routes matching display condition : 1
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH S:SUPPRESSED F:FILTERED
s:STALE
       Prefix       Next Hop       MED   LocPrf  Weight Status
1      10.3.4.0/24  192.168.4.106        100     0      BE
         AS_PATH: 65001 4355 1 1221
       Last update to IP routing table: 0h12m1s, 1 path(s) installed:
         Gateway           Port
         192.168.2.1       1/2/1
       Route is advertised to 1 peers:
        10.20.20.2(65300)
```

show ip bgp routes community

Displays BGP4 route information that is filtered by community and other options.

Syntax

show ip bgp routes community { *num* | *aa:nn* | **internet** | **local-as** | **no-advertise** | **no-export** }

Parameters

community

Displays routes filtered by a variety of communities.

num

Specifies a community number n the range from 1 to 4294967200.

aa:nn

Specifies an autonomous system-community number.

internet

Displays routes for the Internet community.

local-as

Displays routes for a local sub-AS within the confederation.

no-advertise

Displays routes with this community that cannot be advertised to any other BGP4 devices at all.

no-export

Displays routes for the community of sub-ASs within a confederation.

Modes

User EXEC mode

Examples

The following example shows how to display BGP4 route information that is filtered by a specified community.

```
device> show ip bgp routes community 4
```

show ip bgp summary

Displays summarized information about the status of all BGP connections.

Syntax

show ip bgp summary

Modes

User EXEC mode

Usage Guidelines

If a BGP4 peer is not configured for an address-family, the peer information is not displayed. If a BGP4 peer is configured for an address-family but not negotiated for an address-family after the BGP4 peer is in the established state, the **show ip bgp summary** command output shows (**NoNeg**) at the end of the line for this peer.

Command Output

The **show ip bgp summary** command displays the following information:

This field	Displays
Router ID	The device ID.
Local AS Number	The BGP4 AS number for the device.
Confederation Identifier	The AS number of the confederation in which the device resides.
Confederation Peers	The numbers of the local autonomous systems contained in the confederation. This list matches the confederation peer list you configure on the device.
Maximum Number of Paths Supported for Load Sharing	The maximum number of route paths across which the device can balance traffic to the same destination. The feature is enabled by default but the default number of paths is 1. You can increase the number from 2 through 8 paths.
Number of Neighbors Configured	The number of BGP4 neighbors configured on this device, and currently in established state.
Number of Routes Installed	The number of BGP4 routes in the device BGP4 route table and the route or path memory usage.
Number of Routes Advertising to All Neighbors	The total of the RtSent and RtToSend columns for all neighbors, the total number of unique ribout group entries, and the amount of memory used by these groups.
Number of Attribute Entries Installed	The number of BGP4 route-attribute entries in the device route-attributes table and the amount of memory used by these entries.
Neighbor Address	The IP addresses of the BGP4 neighbors for this device.
AS#	The AS number.

This field	Displays
State	The state of device sessions with each neighbor. The states are from this perspective of the device, not the neighbor. State values are based on the BGP4 state machine values described in RFC 1771 and can be one of the following for each device: • IDLE - The BGP4 process is waiting to be started. Usually, enabling BGP4 or establishing a neighbor session starts the BGP4 process. A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • ADMND - The neighbor has been administratively shut down. • CONNECT - BGP4 is waiting for the connection process for the TCP neighbor session to be completed. • ACTIVE - BGP4 is waiting for a TCP connection from the neighbor. **Note** : If the state frequently changes between CONNECT and ACTIVE, there may be a problem with the TCP connection. • OPEN SENT - BGP4 is waiting for an Open message from the neighbor. • OPEN CONFIRM - BGP4 has received an Open message from the neighbor and is now waiting for either a KEEPALIVE or NOTIFICATION message. If the device receives a KEEPALIVE message from the neighbor, the state changes to Established. If the message is a NOTIFICATION, the state changes to Idle. • ESTABLISHED - BGP4 is ready to exchange UPDATE packets with the neighbor. **Operational States:** Additional information regarding the operational states of BGP described previously may be added as described in the following: • **(+)** - is displayed if there is more BGP data in the TCP receiver queue. **Note** : If you display information for the neighbor using the **show ip bgp neighbor***ip-addr* command, the TCP receiver queue value will be greater than 0. • **(>)** - indicates that there is more BGP data in the outgoing queue. • **(-)** - indicates that the session has gone down and the software is clearing or removing routes. • **(*)** - indicates that the inbound or outbound policy is being updated for the peer. • (**c)** - indicates that the table entry is clearing. • (**p)** - indicates that the neighbor ribout group membership change is pending or in progress • **(s)** - indicates that the peer has negotiated restart, and the session is in a stale state. • **(r)** - indicates that the peer is restarting the BGP4 connection, through restart. • **(^)** - on the standby MP indicates that the peer is in the ESTABLISHED state and has received restart capability (in the primary MP). • **(<)** - indicates that the device is waiting to receive the "End of RIB" message the peer.
Time	The time that has passed since the state last changed.
Accepted	The number of routes received from the neighbor that this device installed in the BGP4 route table. Usually, this number is lower than the RoutesRcvd number. The difference indicates that this device filtered out some of the routes received in the UPDATE messages.

This field	Displays
Filtered	The routes or prefixes that have been filtered out: • If soft reconfiguration is enabled, this field shows how many routes were filtered out (not placed in the BGP4 route table) but retained in memory. • If soft reconfiguration is not enabled, this field shows the number of BGP4 routes that have been filtered out.
Sent	The number of BGP4 routes the device has sent to the neighbor.
ToSend	The number of routes the device has queued to advertise and withdraw to a neighbor.

Examples

The following example displays sample output from the **show ip bgp summary** command.

```
device> show ip bgp summary
   BGP4 Summary
  Router ID: 7.7.7.7   Local AS Number: 100
  Confederation Identifier: not configured
  Confederation Peers:
  Maximum Number of IP ECMP Paths Supported for Load Sharing: 1
  Number of Neighbors Configured: 1, UP: 1
  Number of Routes Installed: 0
  Number of Routes Advertising to All Neighbors: 0 (0 entries)
  Number of Attribute Entries Installed: 0
  '+': Data in InQueue '>': Data in OutQueue '-': Clearing
  '*': Update Policy 'c': Group change 'p': Group change Pending
  'r': Restarting 's': Stale '^': Up before Restart '<': EOR waiting
  Neighbor Address  AS#         State   Time          Rt:Accepted Filtered Sent     ToSend
  10.1.1.8          100         ESTAB   0h 9m16s      0           0        0        0
```

show ip bgp vrf

Displays entries in the IPv4 Border Gateway Protocol (BGP4) routing table for a virtual routing and forwarding (VRF) instance.

Syntax

show ip bgp vrf*vrf-name*

show ip bgp vrf*vrf-name**ipv6 address//mask*[**longer-prefixes**]

show ip bgp vrf*vrf-name**ip address/*[*/mask*][**longer-prefixes**]

show ip bgp vrf*vrf-name***attribute-entries**

show ip bgp vrf*vrf-name***dampened-paths**

show ip bgp vrf*vrf-name***filtered-routes**[**detail**][*ip-addr*{*/mask*}[**longer-prefixes**]]|**as-path-access-list***name*]|**prefix-list***name*]

show ip bgp vrf *vrf-name***flap-statistics**

show ip bgp vrf *vrf-name***flap-statistics***ip-addr*{*/mask*}[**longer-prefix**]

show ip bgp vrf *vrf-name***flap-statisticsas-path-filter***name*

show ip bgp vrf *vrf-name***flap-statisticsneighbor***ip-addr*

show ip bgp vrf *vrf-name***flap-statisticsregular-expression***name*

show ip bgp vrf *vrf-name***nexthop**[*ip-addr*|**reachable**|**unreachable**]

show ip bgp vrf *vrf-name***peer-group***peer-group-name*

show ip bgp vrf *vrf-name***summary**

Parameters

vrf-name

Specifies the name of a VRF instance.

ipv6 address/mask

Specifies an IPv6 address and mask.

longer-prefixes

Specifies all statistics for routes that match the specified route, or that have a longer prefix than the specified route.

ip address/mask

Specifies an IP address and mask.

attribute-entries

Specifies BGP4 route-attribute entries that are stored in device memory.

dampened-paths

Specifies multiprotocol BGP (MBGP) paths that have been dampened by route-flap dampening.

filtered-routes

Specifies BGP4 filtered routes that are received from a neighbor or peer group.

detail

Optionally displays detailed route information.

as-path-access-list*name*
Specifies an AS-path ACL. The name must be between 1 and 32 ASCII characters in length.

prefix-list*name*
Specifies an IP prefix list. The name must be between 1 and 32 ASCII characters in length.

flap-statistics
Specifies the route flap statistics for routes received from or sent to a BGP4 neighbor.

as-path-filter*name*
Specifies an AS-path filter.

neighbor
Displays flap statistics only for routes learned from the specified neighbor.

ip-addr
IPv4 address of the neighbor.

regular-expression
Specifies a regular expression in the display output on which to filter.

name
Name of an AS-path filter or regular expression.

nexthop
Specifies the configured next hop.

reachable
Specifies reachable next hops.

unreachable
Specifies unreachable next hops.

peer-group*peer-group-name*
Specifies a peer group.

summary
Displays summarized information.

Modes

User EXEC mode

Examples

The following example shows BGP4 neighbor information for a VRF instance.

```
device> show ip bgp vrf blue neighbors
    Total number of BGP Neighbors:1
1   IP Address: 15.1.1.1, AS: 1 (IBGP), RouterID: 3.3.3.3, VRF: blue
    State: ESTABLISHED, Time: 1d22h43m13s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 2 seconds, HoldTimer Expire in 29 seconds
    Minimal Route Advertisement Interval: 0 seconds
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       1       16729     0            0
       Received: 1       1       18103     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                   Tx: ---        ---           Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV4  unicast  capability
      Peer configured for IPV4 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 4, Use Count: 2
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   317929, Received: 344035
       Local host:  15.1.1.2, Local  Port: 179
       Remote host: 15.1.1.1, Remote Port: 8220
       ISentSeq:   21517275  SendNext:   21835205  TotUnAck:          0
       TotSent:      317930  ReTrans:           0  UnAckSeq:   21835205
       IRcvSeq:   155554412  RcvNext:   155898448  SendWnd:       16384
       TotalRcv:     344036  DupliRcv:          0  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1420
```

History

Release version	Command history
09.0.10	The output for this command was modified to include TCP keychain authentication option (AO) information.

show ip bgp vrf neighbors

Displays configuration information and statistics for BGP4 neighbors of the device for a virtual routing and forwarding (VRF) instance.

Syntax

show ip bgp vrf *vrf-name* **neighbors** [*ip-addr*]

show ip bgp vrf *vrf-name* **neighbors last-packet-with-error**

show ip bgp vrf *vrf-name* **neighbors routes-summary**

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **advertised-routes** [**detail**] [*ip-address /mask*]

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **flap-statistics**

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **last-packet-with-error** [**decode**]

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **received** [**prefix-filter**]

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **received-routes** [**detail**]

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **rib-out-routes** [**detail**] [*ipv6-address /mask*]

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **routes**

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **routes** { **best** | **not-installed-best** | **unreachable** }

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **routes detail** { **best** | **not-installed-best** | **unreachable** }

show ip bgp vrf *vrf-name* **neighbors** *ip-addr* **routes-summary**

Parameters

vrf-name
: Specifies the name of a VRF instance.

neighbors
: Specifies a neighbor.

ip-addr
: IPv4 address of a neighbor in dotted-decimal notation.

last-packet-with-error
: Displays the last packet with an error.

routes-summary
: Displays routes received, routes accepted, number of routes advertised by peer, and so on.

advertised-routes
: Specifies the routes that the device has advertised to the neighbor during the current BGP4 session.

detail
: Specifies detailed information.

ip address/mask
: Specifies an IP address and mask.

flap-statistics
: Specifies the route flap statistics for routes received from or sent to a BGP4 neighbor.

last-packet-with-error
Specifies the last packet with an error.

decode
Decodes the last packet that contained an error from any of a device's neighbors.

received
Specifies Outbound Route Filters (ORFs) received from BGP4 neighbors of the device.

prefix-filter
Displays the results for ORFs that are prefix-based.

received-routes
Specifies all route information received in route updates from BGP4 neighbors of the device since the soft-reconfiguration feature was enabled.

rib-out-routes
Displays information about the current BGP4 Routing Information Base (Adj-RIB-Out) for specific neighbors and specific destination networks.

routes
Displays a variety of route information received in UPDATE messages from BGP4 neighbors.

best
Displays routes received from the neighbor that are the best BGP4 routes to their destination.

not-installed-best
Displays routes received from the neighbor that are the best BGP4 routes to their destination but were not installed in the route table because the device received better routes from other sources.

unreachable
Displays routes that are unreachable because the device does not have a valid RIP, OSPF, or static route to the next hop.

routes-summary
Displays all route information received in UPDATE messages from BGP4 neighbors.

Modes

User EXEC mode

Privileged EXEC mode

Examples

The following example shows how to display configuration information and statistics for BGP4 neighbors of the device for a VRF instance.

```
device# show ip bgp vrf blue neighbors
    Total number of BGP Neighbors:1
1   IP Address: 15.1.1.1, AS: 1 (IBGP), RouterID: 3.3.3.3, VRF: blue
    State: ESTABLISHED, Time: 1d22h43m13s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 2 seconds, HoldTimer Expire in 29 seconds
    Minimal Route Advertisement Interval: 0 seconds
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       1       16729     0            0
       Received: 1       1       18103     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                   Tx: ---        ---           Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV4  unicast  capability
      Peer configured for IPV4 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 4, Use Count: 2
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   317929, Received: 344035
       Local host:  15.1.1.2, Local  Port: 179
       Remote host: 15.1.1.1, Remote Port: 8220
       ISentSeq:   21517275  SendNext:   21835205  TotUnAck:          0
       TotSent:      317930  ReTrans:           0  UnAckSeq:   21835205
       IRcvSeq:   155554412  RcvNext:   155898448  SendWnd:       16384
       TotalRcv:     344036  DupliRcv:          0  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1420
```

The following example displays BGP neighbor information for a specific VRF (blue) and IP address (15.1.1.1).

```
device# show ip bgp vrf blue neighbors 15.1.1.1
1   IP Address: 15.1.1.1, AS: 1 (IBGP), RouterID: 3.3.3.3, VRF: blue
    State: ESTABLISHED, Time: 1d22h43m42s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 3 seconds, HoldTimer Expire in 28 seconds
    Minimal Route Advertisement Interval: 0 seconds
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 1/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       1       16732     0            0
       Received: 1       1       18106     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                  Tx: ---        ---          Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV4  unicast  capability
      Peer configured for IPV4 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 4, Use Count: 2
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   317986, Received: 344092
       Local host:  15.1.1.2, Local  Port: 179
       Remote host: 15.1.1.1, Remote Port: 8220
       ISentSeq:   21517275  SendNext:   21835262  TotUnAck:          0
       TotSent:      317987  ReTrans:           0  UnAckSeq:   21835262
       IRcvSeq:   155554412  RcvNext:   155898505  SendWnd:       16384
       TotalRcv:     344093  DupliRcv:          0  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1420
```

History

Release version	Command history
09.0.10	This command was modified to add TCP keychain authentication option (AO) information to the output.

show ip bgp vrf routes

Displays statistics for the routes in the BGP4 route table of a device for a virtual routing and forwarding (VRF) instance.

Syntax

show ip bgp vrf *vrf-name* **routes** [**detail**] [*num* | *ip-address/prefix* | **age** *num* | **as-path-access-list** *name* | **as-path-filter** *number* | **best** | **cidr-only** | **community-access-list** *name* | **community-filter** *number* | **community-reg-expression** *expression* | **local** | **neighbor** *ip-addr* | **nexthop** *ip-addr* | **no-best** | **not-installed-best** | **prefix-list** *string* | **regular-expression** *name* | **route-map** *name* | **summary** | **unreachable**]

Parameters

vrf-name
Specifies the name of a VRF instance.

detail
Displays detailed information.

num
Table entry at which the display starts. For example, if you want to list entries beginning with table entry 100, specify 100.

ip-address/prefix
Specifies an IP address and prefix.

age *num*
Displays BGP4 route information that is filtered by age.

as-path-access-list *name*
Displays BGP4 route information that is filtered by autonomous system (AS)-path access control list (ACL).

as-path-filter *number*
Displays BGP4 route information that is filtered using the specified AS-path filter.

best
Displays BGP4 route information that the device selected as best routes.

cidr-only
Displays BGP4 routes whose network masks do not match their class network length.

community-access-list *name*
Displays BGP4 route information for an AS-path community access list.

community-filter *number*
Displays BGP4 route information that matches a specific community filter.

community-reg-expression *expression*
Displays BGP4 route information for an ordered community list regular expression.

local
Displays BGP4 route information about selected local routes.

neighbor *ip-addr*
Displays BGP4 route information about selected BGP neighbors.

nexthop *ip-addr*
Displays BGP4 route information about routes that are received from the specified next hop.

no-best
Displays BGP4 route information that the device selected as not best routes.

not-installed-best
Displays BGP4 route information about best routes that are not installed.

prefix-list *string*
Displays BGP4 route information that is filtered by a prefix list.

regular-expression *name*
Displays BGP4 route information about routes that are associated with the specified regular expression.

route-map *name*
Displays BGP4 route information about routes that use the specified route map.

summary
Displays BGP4 summary route information.

unreachable
Displays BGP4 route information about routes whose destinations are unreachable through any of the BGP4 paths in the BGP4 route table.

Modes

User EXEC mode

Examples

The following example shows how to display information for the routes in the BGP4 route table of a device for a VRF instance.

```
device> show ip bgp vrf red routes
```

show ip bgp vrf routes community

Displays BGP4 route information that is filtered by community and other options for a virtual routing and forwarding (VRF) instance.

Syntax

show ip bgp vrf routes community *vrf-name* { *num* | *aa:nn* | **internet** | **local-as** | **no-advertise** | **no-export** }

Parameters

community
Displays routes filtered by a variety of communities.

num
Specifies a community number n the range from 1 to 4294967200.

aa:nn
Specifies an autonomous system-community number.

internet
Displays routes for the Internet community.

local-as
Displays routes for a local sub-AS within the confederation.

no-advertise
Displays routes with this community that cannot be advertised to any other BGP4 devices at all.

no-export
Displays routes for the community of sub-ASs within a confederation.

Modes

User EXEC mode

Examples

The following example shows how to display BGP4 route information that is filtered by a community number for a VRF instance.

```
device> show ip bgp vrf red routes community 7
```

show ip cache

Displays IP forwarding cache.

Syntax

show ip cache [**vrf** *vrf-name*] [*ip-address* | *index*]

show ip cache resource

Parameters

vrf *vrf-name*

Displays cache details for a specific VPN Routing/Forwarding instance.

ip-address

Displays cache details for a specific IP address.

index

Displays cache details for cache beginning with the row following the number you enter.

resource

Displays the number of entries in the cache.

Modes

User EXEC mode

Command Output

The **show ip cache** command displays the following information:

Output field	Description
IP Address	The IP address of the destination.
Next Hop	The IP address of the next-hop router to the destination. This field contains either an IP address or the value DIRECT. DIRECT means the destination is either directly attached or the destination is an address on this device. For example, the next hop for loopback addresses and broadcast addresses is shown as DIRECT.
MAC	The MAC address of the destination. If the entry is type U (indicating that the destination is this device), the address consists of zeroes.

Output field	Description
Type	The type of host entry, which can be one or more of the following: • D - Dynamic • P - Permanent • F - Forward • U - Us • C - Complex Filter • W - Wait ARP • I - ICMP Deny • K - Drop • R - Fragment • S - Snap Encap
Port	The port through which this device reaches the destination. For destinations that are located on this device, the port number is shown as "n/a".
VLAN	Indicates the VLANs the listed port is in.
Pri	The QoS priority of the port or VLAN.

Examples

The following example is sample output from the **show ip cache** command.

```
device# show ip cache
Entries in default routing instance:
Total number of cache entries: 1
D:Dynamic  P:Permanent  F:Forward  U:Us  C:Complex Filter
W:Wait ARP  I:ICMP Deny  K:Drop  R:Fragment  S:Snap Encap
     IP Address         Next Hop        MAC             Type   Port    Vlan    Pri
1    192.168.1.11       DIRECT          0000.0000.0000  PU     n/a             0
1    192.168.1.125      DIRECT          0000.0000.0000  PU     n/a             0
1    10.168.1.11        DIRECT          0000.0000.0000  PU     n/a             0
```

The following example is sample output from the **show ip cache resource** command.

```
device# show ip cache resource
9 entries in ip-cache, maximum #: 10000
```

show ip client-pub-key

Displays the currently loaded public keys.

Syntax

show ip client-pub-key

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example displays sample output of the **show ip client-pub-key** command.

```
device(config)# show ip client-pub-key
---- BEGIN SSH2 PUBLIC KEY ----
Comment: DSA Public Key
AAAAB3NzaC1kc3MAAACBAPY8ZOHY2yFSJA6XYC9HRwNHxaehvx5wOJ0rzZdzoSOXxbET W6ToHv8D1UJ/
z+zHo9Fiko5XybZnDIaBDHtblQ+Yp7StxyltHnXF1YLfKD1G4T6JYrdH YI14Om
1eg9e4NnCRleaqoZPF3UGfZia6bXrGTQf3gJq2e7Yisk/gF+1VAAAAFQDb8D5cv
wHWTZDPfX0D2s9Rd7NBvQAAAIEAlN92+Bb7D4KLYk3IwRbXblwXdkPggA4pfdtW9v
GfJ0/RHd+NjB4eo1D+0dix6tXwYGN7PKS5R/FXPNwxHPapcj9uL1Jn2AWQ2dsknf+i/FAA
vioUPkmdMc0zuWoSOEsSNhVDtX3WdvVcGcBq9cetzrtOKWOocJmJ80qadxTRHtUAAACB
AN7CY+KKv1gHpRzFwdQm7HK9bb1LAo2KwaoXnadFgeptNBQeSXG1vO+JsvphVMBJc9HS
n24VYtYtsMu74qXviYjziVucWKjjKEb11juqnF0GDlB3VVmxHLmxnAz643WK42Z7dLM5
sY29ouezv4Xz2PuMch5VGPP+CDqzCM4loWgV
---- END SSH2 PUBLIC KEY ----
```

show ip dhcp-client options

Displays the list of options the Dynamic Host Configuration Protocol (DHCP) client has received from the DHCP server.

Syntax

show ip dhcp-client options

Modes

User EXEC mode

Usage Guidelines

The DHCP client must be enabled to be able to view the output of this command correctly.

Command Output

The **show ip dhcp-client options** command displays the following information:

Output field	Description
DHCP Client Received Option(s)	Specifies the options the client has received, such as the dynamic IP address, subnet mask, lease time, server IP address, default-router address, TFTP server address, boot filename, DNS-server address, host name, and vendor-specific information.

Examples

The following example displays the DHCP client options received from the server.

```
device(config)# show ip dhcp-client options
DHCP Client Received Option(s) :

Client Received Options on port: 1/1/2
    Dynamic IP address: 110.1.1.2
           Subnet mask: 255.255.255.0
            Lease Time: 2400
       Server IP Address (option  54): 110.1.1.1
  default-router address (option   3): 110.1.1.1
     TFTP server address (option 150): 110.1.1.20
        TFTP Server Name (option  66): CHN-EL1-E03-65-112
           Boot filename (option  67): boot.cfg
      dns-server address (option   6): 1.1.1.10
         DNS Server Name (option  15): ruckuscom
              Host Name (option  12): dhcp_host
    Vendor Specific Info (option  43): None
```

The following example displays the DHCP client options including the image type and flash location.

```
device(config)# show ip dhcp-client options

DHCP Client Received Option(s) :

Client Received Options on port: 1/1/35
    Dynamic IP address: 65.1.1.2
           Subnet mask: 255.255.255.0
            Lease Time: 86400
       Server IP Address (option  54): 65.1.1.1
  default-router address (option   3): None
     TFTP server address (option 150): 65.1.1.1
        TFTP Server Name (option  66): None
           Boot filename (option  67): FI08070_Manifest.txt router primary
      dns-server address (option   6): None
         DNS Server Name (option  15): None
              Host Name (option  12): None
    Vendor Specific Info (option  43): None
```

The following example displays information for the DHCP client when the vendor specific information (VSI) option information is received from the DHCP server as text (create default ve).

```
device(config)# show ip dhcp-client options

DHCP Client Received Option(s) :

Client Received Options on port: 2/1/21
    Dynamic IP address: 20.1.1.2
           Subnet mask: 255.255.255.0
            Lease Time: 86400
       Server IP Address (option  54): 20.1.1.1
  default-router address (option   3): 20.1.1.1
     TFTP server address (option 150): 20.1.1.1
        TFTP Server Name (option  66): None
           Boot filename (option  67): None
      dns-server address (option   6): 110.1.1.20
         DNS Server Name (option  15): brd.com
    Vendor Specific Info (option  43): create default ve
```

The following example displays information for the DHCP client when the VSI option information is received from the DHCP server in the expected TLV format data (sub-option data in comma-separated IP address format).

```
device(config)# show ip dhcp-client options

DHCP Client Received Option(s) :

Client Received Options on port: 2/1/21
    Dynamic IP address: 20.1.1.2
           Subnet mask: 255.255.255.0
            Lease Time: 86400
       Server IP Address (option  54): 20.1.1.1
  default-router address (option   3): 20.1.1.1
     TFTP server address (option 150): 20.1.1.1
        TFTP Server Name (option  66): None
           Boot filename (option  67): None
      dns-server address (option   6): 110.1.1.20
         DNS Server Name (option  15): brd.com
    Vendor Specific Info (option  43): TLV Format Data
                  (Code 6) : 12.12.12.12 13.13.13.13
```

The following example displays output for the DHCP client when the VSI option information is received from the DHCP server in TLV format, but with sub-option data as non-readable characters.

```
device(config)# show ip dhcp-client options

Client Received Options on port: 2/1/21
    Dynamic IP address: 20.1.1.2
           Subnet mask: 255.255.255.0
            Lease Time: 86400
       Server IP Address (option  54): 20.1.1.1
  default-router address (option   3): 20.1.1.1
     TFTP server address (option 150): 20.1.1.1
        TFTP Server Name (option  66): None
           Boot filename (option  67): None
      dns-server address (option   6): 110.1.1.20
         DNS Server Name (option  15): brd.com
    Vendor Specific Info (option  43): TLV Format Data
                                       ( Code   6 ) :
```

The following example displays output for the DHCP client when the VSI option information is received from the DHCP server in ASCII format, including the SmartZone IP Address received.

```
device(config)# show ip dhcp-client options

DHCP Client Received Option(s) :

Client Received Options on port: v1
    Dynamic IP address: 20.20.20.2
           Subnet mask: 255.255.255.0
            Lease Time: 300
       Server IP Address (option  54): 20.20.20.1
  default-router address (option   3): None
     TFTP server address (option 150): 20.20.20.1
        TFTP Server Name (option  66): None
           Boot filename (option  67): None
      dns-server address (option   6): None
         DNS Server Name (option  15): None
               Host Name (option  12): None
    Vendor Specific Info (option  43): ASCII
                                       ( Code   7 ) : 10.10.10.10,12.12.12.12
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.70	This command was modified to show DHCP client options in the new option format.
08.0.80	This command was modified to include information in the output for option 67 enhancements where both the image type and flash location are specified by the user. This command was also modified to display information for option 43 enhancements where data related to the VSI received from the SmartZone DHCP server is displayed.
09.0.00	This command output was modified to display information for option 43 enhancements where data related to the VSI received from the SmartZone DHCP server is displayed in ASCII format including the SmartZone IP Address received.

show ip dhcp relay information

Displays the configured DHCP relay information options.

Syntax

show ip dhcp relay information

Modes

User EXEC mode

Examples

The following example displays the default output if DHCP option 82 is not enabled.

```
device(config)# show ip dhcp relay information

Relay Agent Information: format: Circuit-ID: vlan-port
                                Remote-ID : stack mac
                                Policy    : replace
```

The following example displays output if only the subscriber ID is configured. The circuit ID and remote ID display the defaults.

```
device(config)# show ip dhcp relay information

Relay Agent Information: policy: replace
 port : 1/2/4
     circuit-id      : 000b0043
     remote-id       : 001000630054
```

The following example displays the configured DHCP relay information options when the device is configured to discard messages containing relay agent information.

```
device> show ip dhcp relay information

Relay Agent Information: format: Circuit-ID: vlan-port
                                Remote-ID : stack mac
                                Policy    : drop
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.95	The output of this command was modified.

show ip dhcp relay information brief

Displays the configured DHCP relay information options in brief.

Syntax

show ip dhcp relay information brief

Modes

User EXEC mode

Usage Guidelines

This command output shows a maximum of 20 characters. The **show ip dhcp relay information** command displays all the characters.

Examples

The following example displays the output if option 82 is not enabled.

```
device> show ip dhcp relay information brief
Relay Agent Information: policy: replace
```

The following example displays the summarized configured DHCP relay information options when the device is configured to keep the existing relay agent information.

```
device> show ip dhcp relay information brief
Relay Agent Information: policy: keep
```

The following example displays the summarized configured DHCP relay information options when the device is configured to discard messages containing relay agent information.

```
device> show ip dhcp relay information brief
Relay Agent Information: policy: drop
```

The following example displays output if the circuit ID or remote ID is configured.

```
device(config-if-e10000-1/2/3)# show ip dhcp relay info brief
Relay Agent Information: policy: replace
 Port       Circuit-ID           Remote-ID           Subscriber-ID
 1/2/4      000b0043             001000630054        None
```

The following example displays output if all the sub-options are configured.

```
device(config-if-e10000-1/2/3)# show ip dhcp relay info brief
Relay Agent Information: policy: replace
 Port       Circuit-ID           Remote-ID           Subscriber-ID
 1/2/3           Brcd01             remote01             Brcd02
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.95	The output for this command was modified.

show ip dhcp-server address-pools

Displays information about Dynamic Host Configuration Protocol (DHCP) address pools.

Syntax

show ip dhcp-server address-pools [*name*]

Parameters

name

Specifies the name of an address pool.

Modes

Global configuration mode

Command Output

The **show ip dhcp-server address-pool** command displays the following options if they are configured in the dhcp server pool:

Output field	Description
Pool name	The name of the address pool
Time elapsed since last save	The amount of time that has elapsed since the last save
Total number of active leases	The number of leases that are currently active
Address Pool State	The state of the address pool (active or inactive)
IP Address Exclusions	IP addresses that are not included in the address pool
bootfile	The name of the bootfile
dhcp-default-router	The address of the DHCP default router
dhcp-server-router	The address of the DHCP server router
dns-server	The address of the DNS server
domain-name	The name of the domain
lease	The identifier for the lease
ip-telephony-voice-server	The IP address of the voice server
ip-telephony-data-server	The IP address of the data server
wpad	The network location of the PAC file
xwindow manager	The IP addresses of systems that are running the X Window System Display Manager and are available to the client.
netbios-name-server	The address of the netBIOS name server
network	The address of the network
tftp-server	The IP address of the TFTP server
next-bootstrap-server	The IP address of the next-bootstrap server
vendor-class ascii	The ASCII value of the DHCP client
option	The value of the corresponding option configured

Examples

The following example displays information about all IP DHCP server address pools.

```
device# show ip dhcp-server address-pools
Showing all address pool(s):
Pool Name: one
Time elapsed since last save: 0d:0h:6m:52s
Total number of active leases: 2
Address Pool State: active
IP Address Exclusions: 192.168.1.45
IP Address Exclusions: 192.168.1.99 192.168.1.103
Pool Configured Options:
bootfile: FI08030b_Manifest.txt
dhcp-default-router: 192.168.1.1
dns-server: 192.168.1.100
domain-name: example.com
lease: 0 0 30
ip-telephony-voice-server: MCIPADD=192.168.42.1,MCPORT=1719,TFTPSRVR=192.168.42.1
ip-telephony-data-server: MCIPADD=192.168.42.1,MCPORT=1719,TFTPSRVR=192.168.42.1
wpad: http://172.26.67.243:8080/wpad.dat
xwindow manager: 10.38.12.1 10.38.12.3 10.38.12.5
netbios-name-server: 192.168.1.101
network: 192.168.1.0 255.255.255.0
hostname: ruckus_router
tftp-server:172.26.51.66
next-bootstrap-server: 192.168.1.102
vendor-class ascii:  "Ruckus CPE"
option: 43 hex 0108c0a80a01c0a81401
```

The following example displays information about all IP DHCP server address pools including the image type and flash location that have been specified by the user.

```
device# show ip dhcp-server address-pools

Showing all address pool(s):

                    Pool Name:  temp
 Time elapsed since last save:  00d:00h:07m:08s
Total number of active leases:  0
           Address Pool State:  active

      Pool Configured Options:
                           lease:  1 0 0
                         network:  65.1.1.0 255.255.255.0
  option  67 (Bootfile-Name      ):  ascii "fi8070_manifest.txt router primary"
 option 150 (TFTP Server Addr   ):  ip 50.50.50.1
```

History

Release version	Command history
08.0.30b	This command was modified to include X Window System Display Manager updates in the output.
08.0.30mb	This command was modified to include the vendor class option in the output.
08.0.40	This command was modified to include updates in the output for WPAD, IP-telephony-voice, and data server.
08.0.80	This command was modified to include information in the output for option 67 enhancements where both the image type and flash location are specified by the user.

show ip dhcp-server binding

Displays the IP DHCP server lease entry.

Syntax

show ip dhcp-server binding

Modes

Global configuration mode

Usage Guidelines

The **show ip dhcp-server binding** command displays a specific DHCP active lease, or all active leases.

Command Output

The **show ip dhcp-server binding** command displays the following information:

Output field	Description
IP Address	The IP addresses currently in the binding database.
Client ID/Hardware address	The hardware address of the client.
Lease expiration	The time when this lease will expire.
Type	The type of lease.

Examples

The following example displays the IP DHCP server bindings.

```
device# show ip dhcp-server binding
Bindings from all pools:
IP Address Client-ID/ Lease expiration Type
Hardware address
192.168.1.2 0000.005d.a440 0d:0h:29m:31s Automatic
192.168.1.3 0000.00e1.26c0 0d:0h:29m:38s Automatic
```

show ip dhcp-server flash

Displays the lease-binding database stored in the flash memory.

Syntax

show ip dhcp-server flash

Modes

Global configuration mode

User EXEC mode

Command Output

The **show ip dhcp-server flash** command displays the following information:

Output field	Description
IP Address	The IP address of the flash memory lease-binding database.
Client-ID/Hardware address	The address of the client.
Lease expiration	The time when the lease will expire.
Type	The type of lease.

Examples

The following example displays details of the lease-binding database stored in the flash memory.

```
device# show ip dhcp-server flash
Address Pool Binding:
IP Address Client-ID/ Lease expiration Type
Hardware address
192.168.1.2 0000.005d.a440 0d:0h:18m:59s Automatic
192.168.1.3 0000.00e1.26c0 0d:0h:19m:8s Automatic
```

show ip dhcp-server summary

Displays the IP DHCP server summary.

Syntax

show ip dhcp-server summary

Modes

User EXEC mode

Usage Guidelines

The **show ip dhcp-server summary** command displays information about active leases, deployed address pools, undeployed address pools, and server uptime.

Command Output

The **show ip dhcp-server summary** command displays the following information:

Output field	Description
Total number of active leases	Indicates the number of leases that are currently active.
Total number of address-pools	The number of address pools currently in use.
Server uptime	The amount of time that the server has been active.

Examples

The following example displays the IP DHCP server summary.

```
device# show ip dhcp-server summary
DHCP Server Summary:
Total number of active leases: 1
Total number of address-pools: 1
Server uptime: 00d:01h:52m:17s
```

show ip dhcp snooping

Displays the DHCP snooping binding database information.

Syntax

show ip dhcp snooping

Modes

User EXEC mode

Examples

The following example displays the DHCP snooping information.

```
device> show ip dhcp snooping

IP DHCP snooping enabled on 24 VLAN(s):
        VLAN(s): 1001 to 1024
```

History

Release version	Command history
08.0.95	The command output was modified to display snooping information for a range of VLANs in one line.

show ip dhcp snooping info

Displays DHCP snooping learned entry information.

Syntax

show ip dhcp snooping info

Modes

User EXEC mode

Usage Guidelines

Beginning with FastIron 08.0.30b, this command reads data from the DHCP binding database, and not from the flash file, as in releases prior to FastIron 08.0.30b.

Examples

The following example shows the DHCP snooping learned entries.

```
device> show ip dhcp snooping info

Dhcp snooping Info
Total Learnt Entries 1
Learnt DHCP Snoop Entries
     IP Address      Mac Address    Port/Lag     Vlan     lease      VRF
     1.1.0.4         00c7.0400.0001 1/2/4        1        3597       default-vrf
     …
```

The following example shows the DHCP snooping learned entries in which two snooping entries are maintained for the same IP address and MAC address in different VLANs.

```
device> show ip dhcp snooping info

Dhcp snooping Info
Total Cached/Learnt Entries 2
Learnt DHCP Snoop Entries
     IP Address      Mac Address    Port/Lag     Vlan     lease      VRF
     11.1.0.4        0041.0411.0001 2/3/2        11       99          -
     11.1.0.4        0041.0411.0001 2/3/2        12       3600        -
```

History

Release version	Command history
08.0.61	The command output was modified.
08.0.95	The command output was modified to no longer display virtual port information..

show ip dhcp snooping vlan

Displays the DHCP snooping status for a VLAN and the trusted or untrusted ports.

Syntax

show ip dhcp snooping vlan *vlan-id*

Parameters

vlan-id

Specifies the VLAN ID.

Modes

Privileged EXEC mode

Command Output

The **show ip dhcp snooping vlan** command displays the following information:

Output field	Description
IP DHCP snooping VLAN #	Displays whether IP DHCP snooping is enabled or disabled.

Examples

The following example displays the IP DHCP snooping status on VLAN 2.

```
device# show ip dhcp snooping vlan 2
IP DHCP snooping VLAN 2: Enabled
```

show ip http status

Displays whether HTTP and HTTPS ports are enabled or disabled.

Syntax

show ip http status

Modes

All modes

Usage Guidelines

HTTP and HTTPS ports are enabled by default on most ICX devices.

Command Output

The **show ip http status** command displays the following information:

Output field	Description
HTTP Port status:	Enabled - HTTP ports open Disabled - HTTP ports closed
HTTPS Port status:	Enabled - HTTPS ports open Disabled - HTTPS ports closed

Examples

The following example indicates that HTTP and HTTPS ports on the device are open.

```
device# show ip http status
HTTP Port status: Enabled
HTTPS Port status: Enabled
```

History

Release version	Command history
08.0.92	This command was introduced.

show ip igmp group

Displays the status of Internet Group Management Protocol (IGMP) multicast groups on a device.

Syntax

show ip igmp[**vrf***vrf-name*]**group**[**detail**]

show ip igmp[**vrf***vrf-name*]**group**[*group-address*[**detail**|**tracking**]]

Parameters

vrf*vrf-name*

Specifies information for a VRF instance.

detail

Displays detailed information for IGMP multicast groups.

group-address

Specifies the address of the specific multicast group. If you do not specify a group address, information for all multicast groups is displayed.

detail

Displays information for the source list of the multicast group.

tracking

Displays information about interfaces that have tracking enabled.

Modes

User EXEC mode

Command Output

The **show ip igmp group** command displays the following information:

Output Field	Description
Group	The address of the multicast group.
Port	The physical port on which the multicast group was received.
Intf	The virtual interface on which the multicast group was received.
Timer	Shows the number of seconds the interface can remain in exclude mode. The exclude mode changes to include mode if it does not receive an “IS_EX” or “TO_EX” message during a certain period of time. The default is 140 seconds.
Mode	Indicates the current mode of the interface: include or exclude. If the interface is in include mode, it admits traffic only from the source list. If the interface is in exclude mode, it denies traffic from the source list and accepts the rest.

Output Field	Description
Srcs	Identifies the source list that will be included or excluded on the interface. If an IGMPv2 group is in exclude mode with Srcs at 0, the group excludes traffic from the 0 (zero) source list, which means that all traffic sources are included.?
Dyn	Shows if there is dynamically learned information.

Examples

The following example displays information for all IGMP multicast groups.

```
device# show ip igmp group
Total 2 entries
------------------------------------------------------------
Idx Group Address    Port      Intf   Mode      Timer  Srcs
---+---------------+------+------+-------+-----+-----+----
  1 232.0.0.1        e1/1/1   v30     include     0    7
  2 226.0.0.1        e1/1/2   v30     exclude    240   2
                     e1/1/3   e1/1/3  include     0    3
Total number of groups 2
```

The following example displays detailed information for the IGMP multicast group 239.0.0.1.

```
device# show ip igmp group 239.0.0.1 detail
Total 2 entries
-----------------------------------------------------------
Idx Group Address    Port    Intf   Mode    Timer  Srcs
---+---------------+------+------+-------+-----+------
  1 226.0.0.1        e1/1/2   v30    exclude   218   2
     S: 40.40.40.12
     S: 40.40.40.11
     S: 40.40.40.10
     S: 40.40.40.2          (Age: 218)
     S: 40.40.40.3          (Age: 218)
    226.0.0.1        e1/1/3  e1/1/3   include     0   3
     S: 30.30.30.3          (Age: 165)
     S: 30.30.30.2          (Age: 165)
     S: 30.30.30.1          (Age: 165)
```

The following example displays the list of clients that belong to a particular IGMP multicast group that have tracking enabled.

```
device# show ip igmp group 224.1.10.1 tracking
Total 2 entries
-----------------------------------------------------------
Idx Group Address    Port    Intf    Mode    Timer  Srcs
---+---------------+------+------+-------+-------+-----
  1 226.0.0.1        e1/1/1   v30    exclude   253   3
     S: 40.40.40.12
     S: 40.40.40.11
     S: 40.40.40.10
     S: 40.40.40.2          (Age: 253)
                    C: 10.10.10.1       (Age: 253)
    S: 40.40.40.3          (Age: 253)
                    C: 10.10.10.1       (Age: 253)
    226.0.0.1        e1/1/3   e1/1/3   include     0   3
     S: 30.30.30.3          (Age: 196)
                    C: 10.2.0.1         (Age: 196)
     S: 30.30.30.2          (Age: 196)
                    C: 10.2.0.1         (Age: 196)
     S: 30.30.30.1          (Age: 196)
                    C: 10.2.0.1         (Age: 196)
```

The following example displays information for IGMP multicast groups including MVR status.

```
device# show ip igmp group detail
Total 2 entries
----------------------------------------------------------------
Idx Group Address    Port    Intf    GrpCmpV Mode    Timer  Srcs
---+---------------+------+------+-------+-------+-------------
   1  225.0.0.1    e1/1/48  v115    Ver3    exclude   245 0

   2  232.0.0.1    e1/1/48  v115    Ver3    include   116 1

 S: 114.0.0.10 (Age: 245) (Clients: 0)
Total number of groups 2

device> show ip igmp group

Total 1 groups
--------------------------------------------------------------------------------
Idx  Group Address    Port      Intf      GrpCmpV Mode    Timer Srcs St  Dyn
----+---------------+---------+---------+-------+-------+-----+----+---+----
   1 224.10.10.1      e1/1/48   v511      Ver2    exclude 28    0    Yes No

Total number of groups 1
```

History

Release version	Command history
08.0.95	This command was modified to include the **detail** keyword.
09.0.10	The output of this command was updated to include MVR information.

show ip igmp interface

Displays the status of a Internet Group Management Protocol (IGMP) multicast enabled port.

Syntax

show ip igmp[**vrf***vrf-name*]**interface**[**ethernet***unit/slot/port*|**lag***lag-id*|**ve***ve-num*][**group**[*A.B.C.D*]] [**detail**|**tracking**

show ip igmptunnel*tunnel-id*

Parameters

vrf*vrf-name*
: Specifies information for a VRF instance.

ethernet*unit/slot/port*
: Specifies an Ethernet interface.

lag*lag-id*
: Specifies a LAG interface.

ve*ve-num*
: Specifies a Virtual Ethernet (VE) interface.

group
: Specifies displaying information for a group

A.B.C.D
: Specifies displaying information for a specific group address.

detail
: Specifies detailed interface.

tracking
: Specifies tracking information.

tunnel*tunnel-id*
: Specifies a GRE tunnel interface.

Modes

Privileged EXEC mode

Usage Guidelines

The GRE tunnel interface is enabled under the router PIM configuration.

Command Output

The **show ip igmp interface** command displays the following information:

Output Field	Description
Intf	The virtual interface on which IGMP is enabled.
Port	The physical port on which IGMP is enabled.
Groups	The number of groups for which this interface or port has membership.
Version	
Oper	The IGMP version that is operating on the interface.
Cfg	The IGMP version that is configured for this interface.
Querier	Where the Querier resides: Self: If the Querier is on the same router as the interface or port. or The IP address of the router where the Querier is located.
Max response	
OQrr	Other Querier present timer.
GenQ	General Query timer
V1Rtr	Whether IGMPv1 is present on the interface or port.
V2Rtr	Whether IGMPv2 is present on the interface or port.
Tracking	Fast tracking status: (Enabled or Disabled).
MVR type	Whether the MVR is a source or a receiver.

Examples

The following example displays information for a multicast-enabled port.

```
device# show ip igmp interface
---------+------+---------+---------------+---------+-----+-----+---------
Intf/Port|Groups| Version |Querier        |  Timer  |V1Rtr|V2Rtr|Tracking
         |      |Oper  Cfg|               |OQrr GenQ|     |     |
---------+------+----+----+---------------+----+----+-----+-----+---------
e1/1/3       1    3    3      Self            0   94   No     No   Disabled
e1/1/4       0    2    -      Self            0   94   No     No   Disabled
v30          1    3    3                                          Disabled
e1/1/2       3    -    -      Self            0   20   No     No
v40          0    3    3                                          Disabled
e1/1/2       3    -    -      Self            0   20   No     No
v50          0    2    -                                          Disabled
e1/1/12      2    -    -      Self            0   29   No     No
e1/1/8       2    -    -      50.1.1.10       46   0   No     Yes
e1/1/1       2    -    -      Self            0   115  No     Yes
```

The following example displays information for the interface VE 4041 group.

```
device# show ip igmp interface ve 4041 group
Total 100 groups
----------------------------------------------------------------------
Idx  Group Address    Port      Intf      GrpCmpV  Mode    Timer  Srcs
----+---------------+---------+---------+-------+-------+-----+-----
 1    239.0.1.1        e1/2/8    v4041     Ver2    exclude  247    0

Total number of groups 1
```

The following example displays information for IGMP configurations for an interface, including MVR configurations.

```
device> show ip igmp interface
---------+------+---------+---------------+---------+-----+-----+---------+------
Intf/Port|Groups| Version |Querier        |  Timer  |V1Rtr|V2Rtr|Tracking |MVR
         |      |Oper  Cfg|               |OQrr GenQ|     |     |         |Type
---------+------+----+----+---------------+----+----+-----+-----+---------+------
v1             0    2    -                                          Disabled Source
   e1/4/1      0    2    - *                0    0 No    No
   e1/3/1      0    2    - *              249    0 No    Yes
v10            1    2    -                                          Disabled Receiver
  e1/1/48      1    2    - *                0   81 No    No
```

History

Release version	Command history
08.0.50	This command was modified to include the IGMP **group** keyword.
09.0.10	The output of this command was updated to include MVR information.

show ip igmp proxy

Displays information about the proxy groups and interfaces on the default VRF or, when the **vrf** keyword is specified, other VRFs.

Syntax

show ip igmp [**vrf** *vrf-name*] **proxy** [**group** *group-addr*]

show ip igmp [**vrf** *vrf-name*] **proxy** [**interface** { **ethernet** *stack/slot/port* | **tunnel** *tunnel-id* | **ve** *ve-num* } [**detail** | **group-resp** *ip-addr* | **stats**]]

show ip igmp [**vrf** *vrf-name*] **proxy** [**resource**]

show ip igmp [**vrf** *vrf-name*] **proxy** [**stats**]

show ip igmp [**vrf** *vrf-name*] **proxy** [**summary**]

Parameters

vrf *vrf-name*
Displays information for a VRF instance.

proxy
Displays information about the proxy groups and interfaces.

group *group-addr*
Displays information for the specified IGMP group.

interface
Displays information for the specified interface.

ethernet *stack/slot/port*
Displays information for the specified Ethernet interface.

tunnel *tunnel-id*
Displays information for the specified tunnel interface.

ve *ve-num*
Displays information for the specified VE interface.

detail
Displays detailed information.

group-resp *ip-addr*
Displays information for the group response tree.

stats
Displays information on the interface status.

resource
Displays memory status of various pools.

summary
Displays summary information.

stats
Displays nformation about queries and reports on a specific interface.

Modes

Privileged EXEC mode

Command Output

The **show ip igmp proxy** command displays the following information:

Output Field	Description
Address	Group address.
Mode	Multicast group mode. Can be “exclude” or “include.”
Source count	Number sources in the given mode. A group in IGMP v2 has exclude mode with zero sources.
ref count	Number of proxy interfaces where the responses (query, state, change, etc) are scheduled.
flags	Can be “0” or “1”. “1” indicates that the group state has changed and it needs to be reevaluated before a response is generated. “0” indicates that no change in state response is scheduled.
Name	Interface name.
Oper version	Current querier version or configured version.
Cfg Robust	Configured robustness value.
Unsoli Interval	Unsolitcited report interval in seconds.
Filter Acl Id	Number of the access list.
Filter Name	Name of the access list.

The **show ip igmp proxy summary** command displays the following information:

Output Field	Description
Inst-Name	Number of the proxy instance.
Total Grps	NUmber of proxy groups.

The **show ip igmp proxy stats** command displays the following information:

Output Field	Description
Intf	Interface
genQv1 RX	IGMP v1 general query received on proxy interface.
genQv2 RX	IGMP v2 general query received on proxy interface.
genQv3 RX	IGMP v3 general query received on proxy interface.
GrpQ RX	Group query received.
SrcQ RX	Source query received.
Rprtv1 TX	IGMP v1 report generated.
Rprtv2 TX	IGMP 2 report generated.
Rprtv3 TX	IGMP v3 report generated.
leave TX	IGMP v2 leave generated.

Examples

The following example shows information about the proxy groups and interfaces on the default VRF.

```
device# show ip igmp proxy
Proxy instance name: default-vrf
Total proxy groups: 4
Address             Mode      Source     ref       flags
                              count      count
-----------------------------------------------------
225.1.1.1           exclude   0          0         0
225.1.1.2           exclude   0          0         0
225.1.1.3           exclude   0          0         0
225.1.1.4           exclude   0          0         0
Proxy interfaces
----------------
Name      Oper     Cfg       Unsoli    Filter    Filter
          Version  Robust    Interval  Acl Id    Name
-----------------------------------------------------
e1/1/3      2         2         1         0
```

The following example shows summary information about the proxy groups and interfaces on the default VRF.

```
device# show ip igmp proxy summary
Proxy instances:
-----------------------------------
Inst-Name      Total Grps
-----------------------------------
default-vrf    4
```

This example shows information about queries and reports on interface v300.

```
device# show ip igmp proxy stats
Intf      genQv1  genQv2  genQv3  GrpQ    SrcQ    Rprtv1  Rprtv2  Rprtv3  leave
           RX      RX      RX      RX      RX      TX      TX      TX      TX
-------------------------------------------------------------------------------
v3000      0       0       0       0       0       0       0       0       0
```

show ip igmp settings

Displays global Internet Group Management Protocol (IGMP) settings or IGMP settings for a specified virtual routing and forwarding (VRF) instance.

Syntax

show ip igmp [**vrf** *vrf-name*] **settings**

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

Modes

Privileged EXEC mode

Command Output

The **show ip igmp settings** command displays the following information:

Output Field	Description
Query Interval	How often the router will query an interface for group membership.
Configured Query Interval	The query interval that has been configured for the router.
Max Response Time	The length of time in seconds that the router will wait for an IGMP (V1 or V2) response from an interface before concluding that the group member on that interface is down and removing it from the group.
Group Membership Time	The length of time in seconds that a group will remain active on an interface in the absence of a group report.
Operating Version	The IGMP version operating on the router.
Configured Version	The IGMP version configured on the router.
Robustness Variable	Allows tuning for the expected packet loss on a network. If a network is expected to be lossy, the Robustness Variable may be increased. IGMP is robust to (Robustness Variable -1) packet losses. The Robustness Variable must not be zero, and should not be one. Default: 2
Router Alert Check	IGMP (v2/v3) messages have a router-alert option in the IP header. By default, this is validated by the router and it drops the packets without the router-alert option. If this check is disabled, IGMP messages without the router-alert option are accepted.
Last Member Query Interval	The Max Response Time used to calculate the Max Resp Code inserted into Group-Specific Queries sent in response to Leave Group messages. It is also the Max Response Time used in calculating the Max Resp Code for Group-and-Source-Specific Query messages. Default: 10 (1 second)
Last Member Query Count	The number of Group-Specific Queries sent before the router assumes there are no local members. The Last Member Query Count is also the number of Group-and-Source-Specific Queries sent before the router assumes there are no listeners for a particular source. Default: Robustness Variable.

Output Field	Description
Older Host Present Timer	The Older Host Present Interval is the time-out for transitioning a group back to IGMPv3 mode when an older version report is sent for that group. When an older version report is received, routers set their Older Host Present Timer to the Older Host Present Interval. This value must be the (Robustness Variable x the Query Interval) + one Query Response Interval.
Maximum Group Address	Indicates the maximum number of group addresses that can be accepted by the router.
Group/Source Filter Policy	Indicates what ACL is configured as part of Group/Source Filter Policy configurations.

Examples

The following example displays output showing global IGMP settings.

```
device> show ip igmp settings
IGMP Global Configuration
Query Interval            : 125s    Configured Interval    : 125
Max Response Time         : 10s
Group Membership Time     : 260s
Operating Version         : 2       Configured Version     : 0
Robustness Variable       : 2
Router Alert Check        : Enabled
Last Member Query Interval: 1       Last Member Query Count: 2
Older Host Present Timer  : 260
Maximum Group Address     : 4096
Mcast lines per page      : 23
Group/Source Filter Policy : test1-v4
```

History

Release version	Command history
09.0.10	The command output was modified to include information about IGMP report filter policies.

show ip igmp ssm-map

Displays the association between a configured access control list (ACL) and source address mapped to it.

Syntax

show ip igmp [**vrf** *vrf-name*] **ssm-map** [*group-address*]

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

group-address

Specifies displaying the ACL ID that has the specified multicast group address in its permit list and listing the source addresses mapped to the specified multicast group address.

Modes

Privileged EXEC mode

Examples

The following example shows the association between a configured ACL and source address mapped to it.

```
device# show ip igmp ssm-map
+---------+-----------------+
| Acl id  | Source Address  |
+---------+-----------------+
        20          1.1.1.1
       100          1.1.1.1
        20          2.2.2.2
        20          2.2.2.3
        20          2.2.2.4
        20          2.2.2.5
        20          2.2.2.6
```

The following example shows the ACL IDs that have the specified multicast group address in their permit lists and lists the source addresses mapped to them.

```
device# show ip igmp ssm-map
+---------+-----------------+
| Acl id  | Source Address  |
+---------+-----------------+
        20          1.1.1.1
       100          1.1.1.1
        20          2.2.2.2
        20          2.2.2.3
        20          2.2.2.4
        20          2.2.2.5
        20          2.2.2.6
```

The following example shows the ACL IDs that have the specified multicast group address in their permit lists and lists the source addresses mapped to it.

```
device# show ip igmp ssm-map 232.1.1.1
+---------+-----------------+
| Acl id  | Source Address  |
+---------+-----------------+
        20          1.1.1.1
       100          1.1.1.1
        20          2.2.2.2
        20          2.2.2.3
        20          2.2.2.4
        20          2.2.2.5
        20          2.2.2.6
```

show ip igmp static

Displays information about static IGMP groups.

Syntax

show ip igmp [**vrf** *vrf-name*] **static**

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

Modes

Privileged EXEC mode

Command Output

The **show ip igmp static** command displays the following information:

Output Field	Description
Group Address	The address of the multicast group.
Interface Port List	The physical ports on which the multicast groups are received.

Examples

The following example shows information about static IGMP groups for the VRF named my_vrf.

```
device#show ip igmp vrf my_vrf static
Group Address    Interface Port List
---------------+---------+---------
      229.1.0.12     1/1/1 ethe 1/1/1
      229.1.0.13     1/1/1 ethe 1/1/1
      229.1.0.14     1/1/1 ethe 1/1/1
      229.1.0.92     1/1/1 ethe 1/1/1
```

show ip igmp traffic

Displays the Internet Group Management Protocol (IGMP) traffic status on each port.

Syntax

show ip igmp [**vrf** *vrf-name*] **traffic**

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

Modes

User EXEC mode

Command Output

The **show ip igmp traffic** command displays the following information:

Output Field	Description
RECEIVE COUNTERS	Statistics for receive counters
Port	The port number.
QryV1	Number of general IGMPv1 queries received or sent on the port.
QryV2	Number of general IGMPv2 queries received or sent on the port.
QryV3	Number of general IGMPv3 queries received or sent on the port.
G-Qry	Number of group-specific queries received or sent on the port.
GSQry	Number of source-specific queries received or sent on the port.
MbrV1	Number of IGMPv1 reports received on this port.
MbrV2	Number of IGMPv2 reports received on this port.
MbrV3	Number of IGMPv3 reports received on this port.
Leave	Number of IGMPv2 "leave" messages on the interface.
IsIN	Number of IGMPv3 reports with group record types "MODE_IS_INCLUDE" received on the port.
IsEX	Number of IGMPv3 reports with group record types "MODE_IS_EXCLUDE" received on the port.
ToIN	Number of IGMPv3 reports with group record types “INCLUDE_MODE” received on the port.
ToEX	Number of IGMPv3 reports with group record types “EXCLUDE_MODE” received on the port.
ALLO	Number of IGMPv3 reports with group record types “ALLOW_NEW_SOURCES” received on the port.
BLK	Number of IGMPv3 reports with group record types "BLOCK_OLD_SOURCES" received on the port.
total	Total number of group reports ignored.

Output Field	Description
V1 Reports	Total number of IGMPv1 reports.
Errors	Statistics for types of errors.
xsum	The number of IGMP packets received for which the calculated checksum does not match the checksum field in the packet.
group	The number of IGMP packets received for which the packet size does not match the length field in the packet.
Invalid intf	The number of invalid interfaces.
router alert err	The number of IGMP packets received without the IP router alert option.
subnet miss	The number of IGMP packets dropped because the host IP address is not in the same subnet of that interface.
ttl err	The number of IGMP packets dropped because the time to live (TTL) is not 1.
Filter	Number of IGMP Report or Leave messages filtered.
total max_group_drop_count	Total number of group reports ignored due to the maximum limit configuration for the **ip igmp max-group-address** command.
TRANSMIT COUNTERS	Statistics for transmitted counters.

Examples

The following example displays output showing the IGMP traffic status on each port.

```
device> show ip igmp traffic

RECEIVE COUNTERS
Port     QryV1 QryV2 QryV3 G-Qry GSQry MbrV1 MbrV2 MbrV3 Leave  IsIN  IsEX ToIN ToEX ALLO  BLK
--------+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+----+----+----+----
v10         0     0     0     0     0     0 11212     0  1196     0     0    0    0    0    0
*** total: V1 Reports 0, Errors: xsum 0, group 0, Invalid intf 0, router alert err 0, subnet miss 0,
ttl err 0
Filter: Report 1 Leave 1
*** total max_group_drop_count: 263

TRANSMIT COUNTERS
Port     QryV1 QryV2 QryV3 G-Qry GSQry
--------+-----+-----+-----+-----+-----
lg1         0     0   168     0     0
Note: All Counter are reset, if anyone reaches 100000 and above
```

History

Release version	Command history
08.0.90	The output of this command was modified to display the drop counts and the total number of group reports ignored due to the maximum limit configuration for the **ip igmp max-group-address** command.
08.0.92	The output for this command was modified to display information for drop counters.
09.0.10	The command output was modified to include information about IGMP report filter policies.

show ip interface

Displays useful information about the configuration and status of the IP protocol and its services, on all interfaces.

Syntax

show ip interface [**ethernet** *unit/slot/port* | **loopback** *num* | **tunnel** *num* | **ve** *num* |**lag** *lag-id*]

Parameters

ethernet *unit slot port*

Displays the specified Ethernet interface by unit, slot, and port number.

loopback *num*

Displays the loopback interface number.

tunnel *num*

Displays the tunnel interface number.

ve *num*

Displays the Virtual Ethernet interface number.

lag *lag-id*

Displays the lag number.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

LAG configuration mode

Command Output

The **show ip interface** command displays the following information:

Output field	Description
Interface	The type and the slot and port number of the interface.
IP-Address	The IP address of the interface.
OK?	Whether the IP address is configured on the interface.
Method	Whether the IP address is saved in NVRAM. If you have set the IP address for the interface in the CLI, the Method field is "manual".
Status	The link status of the interface. If the user has disabled the interface with the **disable** command, the entry in the 'Status' field is "administratively DOWN". Otherwise, the entry in the 'Status' field is either UP or DOWN.

Output field	Description
Protocol	Whether the interface can provide two-way communication. If the IP address is configured and the link status of the interface is up, the entry in the 'Protocol' field is UP. Otherwise, the entry in the 'Protocol' field is DOWN.
VRF	Whether the VRF is configured or set to default.

Examples

The following example displays information about all IP interfaces.

```
device# show ip interface

Interface     IP-Address      OK?  Method   Status    Protocol   VRF
Eth 1/1/6     10.53.5.1       YES  manual   down      down       default-vrf
Eth mgmt1     10.25.224.194   YES  manual   up        up         default-vrf
```

The following example displays the **show ip interface** command specifically for tunnel interface 1.

```
device(config)#show ip interface tunnel 1
Interface Tunnel 1
  port enabled
  port state: UP
  ip address: 123.1.1.1         subnet mask: 255.255.255.0
  Port belongs to VRF: default-vrf
  encapsulation: GRE, mtu: 9192, metric: 1
  directed-broadcast-forwarding: disabled
  ICMP redirect: disabled
  TCP adjust-mss: 1200
  proxy-arp: disabled
 ip arp-age:  10 minutes
  No Helper Addresses are configured.
  No inbound ip access-list is set
  No outgoing ip access-list is set
```

The following example displays the IP interface VE configurations.

```
device(config)#show ip interface ve 100
Interface Ve 100
  members: ethe 2/1/21 ethe 3/1/47
  active: ethe 2/1/21 ethe 3/1/47
  port enabled
  port state: UP
  ip address: 100.1.1.1         subnet mask: 255.255.255.0
  Port belongs to VRF: default-vrf
  encapsulation: ETHERNET, mtu: 9216, metric: 1
  directed-broadcast-forwarding: disabled
  ICMP redirect: enabled
  TCP adjust-mss: 1200
  proxy-arp: disabled
  ip arp-age:  10 minutes
  no delay in notification
  No Helper Addresses are configured.
  No inbound ip access-list is set
  No outgoing ip access-list is set
```

The following example displays the **show ip interface** command to verify a user-configured MAC address. The “ip-mac:” text is followed by the configured MAC address.

```
device(config)#show ip interface ethernet 2/1/22
Interface Ethernet 2/1/22
  port enabled
  port state: UP
  ip address: 202.1.1.1         subnet mask: 255.255.255.0
  Port belongs to VRF: default-vrf
  encapsulation: ETHERNET, mtu: 9216, metric: 1
  directed-broadcast-forwarding: disabled
  ICMP redirect: disabled
  TCP adjust-mss: 1200
  proxy-arp: disabled
  ip arp-age:  10 minutes
  No Helper Addresses are configured.
  No inbound ip access-list is set
  No outgoing ip access-list is set
  ip-mac: 000a.000a.000a
```

The following example displays the IP interface LAG configurations.

```
device(config)#show ip interface lag 1
Interface Ethernet lg1
  port enabled
  port state: UP
  ip address: 101.1.1.1         subnet mask: 255.255.255.0
  Port belongs to VRF: default-vrf
  encapsulation: ETHERNET, mtu: 9216, metric: 1
  directed-broadcast-forwarding: disabled
  ICMP redirect: disabled
  TCP adjust-mss: 1200
  proxy-arp: disabled
  ip arp-age:  10 minutes
  No Helper Addresses are configured.
  No inbound ip access-list is set
  No outgoing ip access-list is set
```

History

Release version	Command history
08.0.40	The command output was modified to display a user-configured MAC address for an IP interface.
08.0.90	The IP TCP MSS configuration was introduced to this command.

show ip mroute

Displays information on multicast routes. You can specify whether you want to display information from static or connected mroutes or from a particular mroute.

Syntax

show ip mroute [**vrf** *vrf-name*] { **static** | **connected** | **nexthop** | *ip-subnet* [*mask*]}

Parameters

vrf *vrf-name*

Specifies a VRF route.

static

Specifies a static multicast route.

connected

Specifies a directly attached (connected) multicast route.

nexthop

Specifies an IPv4 next hop table.

ip-subnet [*mask*]

Specifies an IP address.

Modes

Privileged EXEC mode

Global configuration mode

Examples

The following example displays information for IP multicast routes:

```
Device(config)# show ip mroute

Total number of IP routes: 5
 Type Codes - B:BGP  D:Connected  S:Static;   Cost - Dist/Metric
        Destination             Gateway             Port            Cost         Type    Uptime
1       20.20.20.0/24           220.220.220.1       ve 220          1/1           S      8m54s
2       50.50.50.0/24           DIRECT              ve 50           0/0           D      8h26m
3       77.1.1.1/32             DIRECT              loopback 1      0/0           D      8h26m
4       129.129.129.0/24        DIRECT              ve 129          0/0           D      8h26m
5       220.220.220.0/24        DIRECT              ve 220          0/0           D      2h49m
```

The following example displays information for static multicast routes:

```
Device(config)# show ip mroute static

 Type Codes - B:BGP  D:Connected  S:Static;   Cost - Dist/Metric
        Destination             Gateway           Port           Cost    Type    Uptime
1       20.20.20.0/24           220.220.220.1     ve 220         1/1     S       8m54s
```

The following example displays information for directly attached multicast routes:

```
Device(config)# show ip mroute connected

 Type Codes - B:BGP  D:Connected  S:Static;   Cost - Dist/Metric
        Destination             Gateway          Port          Cost    Type    Uptime
1       50.50.50.0/24           DIRECT           ve 50         0/0     D       8h26m
2       77.1.1.1/32             DIRECT           loopback 1    0/0     D       8h26m
3       129.129.129.0/24        DIRECT           ve 129        0/0     D       8h26m
4       220.220.220.0/24        DIRECT           ve 220        0/0     D       2h49m
```

The following example displays information for IP multicast route 50.50.50.100:

```
Device(config)# show ip mroute 50.50.50.100

 Type Codes - B:BGP  D:Connected  S:Static;   Cost - Dist/Metric
        Destination             Gateway          Port          Cost    Type    Uptime
1       50.50.50.0/24           DIRECT           ve 50         0/0     D       8h26m
```

History

Release version	Command history
08.0.10a	This command was introduced.

show ip msdp mesh-group

Displays the details of a specific mesh-group.

Syntax

show ip msdp [**vrf** *vrf-name*] **mesh-group** *group-name*

Parameters

vrf

Displays the mesh-group details for the VRF instance specified by the *vrf-name* variable.

vrf-name

Specifies the VRF instance.

mesh-group

Specifies the MSDP group.

group-name

Specifies the mesh group.

Modes

Privileged EXEC mode

Global configuration mode

MSDP router configuration mode

Usage Guidelines

If used without specifying a VRF, this command shows data from the default VRF.

Command Output

The **show ip msdp** [**vrf** *vrf-name*] **mesh-group** *group-name* command displays the following information:

Output field	Description
Peer Address	The IP address of the MSDP peer that is placed in the mesh group.
State	The state of the MSDP device connection with the mesh group. The state can be one of the following: • CONNECT - The session is in the active open state. • ESTABLISH - The MSDP session is fully up. • IDLE - The session is idle. • LISTEN - The session is in the passive open state.
KA (Keep Alive) In	The number of MSDP keepalive messages received by the mesh group.
KA (Keep Alive) Out	The number of MSDP keepalive messages sent by the mesh group.
SA (Source-Active) In	The number of SA messages received by the mesh group.
SA (Source-Active) Out	The number of SA messages sent by the mesh group.

Output field	Description
NOT (Notification) In	The number of notification messages received by the mesh group.
NOT (Notification) out	The number of notification messages sent by the mesh group.
Age	The number of seconds the messages has been in the cache.

Examples

The following example shows the mesh-group configuration details.

```
device#show ip msdp mesh-group
Mesh-Group-Name                     Peer-IP-Address
group1                                40.0.0.40
group2                                21.0.0.23
```

The following example shows the details of mesh-group group1.

```
device#show ip msdp mesh-group group1
MSDP MESH-GROUP:group1
 KA: Keepalive SA:Source-Active NOT: Notification
 Peer Address    State          KA              SA             NOT         Age
                                In     Out     In     Out     In     Out
 40.0.0.40       ESTABLISH    1407    1406      0      0      0      0      6
```

The following example shows the mesh-group configuration details for the VRF 10 instance.

```
device#show ip msdp vrf 10 mesh-group
Mesh-Group-Name                     Peer-IP-Address
group1                                22.0.0.22
group2                                21.0.0.23
```

The following example shows the mesh-group group2 details for the VRF 10 instance.

```
device#show ip msdp vrf 10 mesh-group group2
MSDP MESH-GROUP:group2
KA: Keepalive SA:Source-Active NOT: Notification
Peer Address    State         KA           SA            NOT         Age
                                          In     Out    In     Out     In     Out
21.0.0.23           IDLE       0      0      0      0      0      0      0      0
```

History

Release version	Command history
08.0.20	This command was introduced.

show ip msdp peer

Displays Multicast Source Discovery Protocol (MSDP) peer information.

Syntax

show ip msdp[**vrf***vrf-name*]**peer***peer-address*

Parameters

vrf*vrf-name*

Displays information for a specific VRF instance.

Modes

User EXEC mode

Command Output

The **show ip msdp peeer** command displays the following information:

Output Field	Description
IP Address	The IP address.
State	Indicates the session state. The session state can be one of the following states: • SHUTDOWN: Peer has been disabled. • IDLE: There is no reachability (route) to the peer or there is no IP address assigned to the source-interface for that peer. • CONNECT: Establishing connection to peer. • LISTEN: Awaiting connection request from peer. • ESTABLISH: Connection established with peer.
Mesh-group-name	The name of mesh group.
Keep Alive Time	The keep alive timer (in seconds).
Hold Time	The hold time, which specifies how many seconds to wait for a keepalive or SA update message from a peer before closing the connection with the peer.
Age	The amount of time (in seconds) elapsed since the last keepalive or SA update message was received from a peer.
Message Sent	The number of messages sent. Statistics are shown for the following message types: • Keep Alive • Notifications • Source-Active
Message Received	The number of messages received. Statistics are shown for the following message types: • Keep Alive • Notifications • Source-Active

Output Field	Description
Lack of Resource	The number of messages from the peer that are dropped due to a lack of resources.
Last Connection Reset Reason	The reason the previous session was terminated.
Notification Message Error Code Received	Indicates if a notification message containing an error code was received.
Notification Message Error SubCode Received	Indicates if a notification message containing an error subcode was received.
Notification Message Error Code Transmitted	Indicates if a notification message containing an error code was sent.
Notification Message Error SubCode Transmitted	Indicates if a notification message containing an error subcode was sent.
Local IP Address	The local IPv4 address.
AO Keychain name:	The name of the TCP authentication keychain applied to the MSDP peer
TCP Connection state	The state of the connection.
TCP Keychain (name) details	Name and configuration details for applied TCP (AO) keychain.
	TCP-AO Enabled: YES/NO
	TCP-AO in use: YES/NO
	Keychain valid: YES/NO
	No of segments dropped: Number of TCP segments that failed TCP authentication
Send-Active-Key	Configuration details about the TCP AO send key
	Crypto Algorithm : Name of key-exchange method used
	Send-id: Numeric identifier of send key
	Recv-id : Numeric identifier of expected receive key
	Include-tcp-options: YES/NO
	Accept-ao-mismatch: YES/NO
Recv-active-key	Configuration details for TCP key used to authenticate received TCP segments
	Crypto Algorithm : Name of key-exchange method used
	Send-id: Numeric identifier of send key
	Recv-id : Numeric identifier of expected receive key
	Include-tcp-options: YES/NO
Local host	The IP address of the device.
Local Port	The TCP port the device is using for the TCP session.
Remote host	The IP address of the neighbor.
Remote Port	The TCP port the neighbor is using for the TCP session.
SentSeq	The initial send sequence number for the session.
SendNext	The next sequence number to be sent.
TotUnAck	The number of sequence numbers sent by the device that have not been acknowledged by the neighbor.
SendWnd	The size of the send window.
TotSent	The number of sequence numbers sent to the neighbor.
ReTrans	The number of sequence numbers that the device retransmitted because they were not acknowledged.
IRcvSeq	The initial receive sequence number for the session.
RcvNext	The next sequence number expected from the neighbor.
RcvWnd	The size of the receive window.

Output Field	Description
TotalRcv	The number of sequence numbers received from the neighbor.
RcvQue	The number of sequence numbers in the receive queue.
SendQue	The number of sequence numbers in the send queue.
Input SA Filter	Indicates whether a filter has been applied for incoming SA messages from the peer.
Input (S,G) route-map	The route map configured to filter incoming SA messages from the peer for specific sources (S) and groups (G).
Input RP route-map	The route map configured to filter incoming SA messages from the peer for a specific rendezvous point (RP).
Output SA Filter	Indicates whether a filter has been applied for outgoing SA messages to the peer.
Output (S,G) route-map	The route map configured to filter outgoing SA messages to a peer for specific sources (S) and groups (G) .
Output RP route-map	The route map configured to filter outgoing SA messages to a peer for a specific RP.
SA message Drops	Number of SA messages dropped.
Bad_length	Number of SA messages dropped due to invalid length.
Invalid_VrfIdx	Number of SA messages dropped due to invalid VRF index.
Rpf_Failure_Drop	Number of SA messages that failed RPF check.
Wrong_group_Drop	Number of SA messages received for IPv4 multicast group address in the Local Network Control Block (224.0.0.0 – 224.0.0.255) or in the Internetwork Control Block (224.0.1.0 – 224.0.1.255). SA messages for these multicast group addresses will be dropped because the traffic to these group addresses is not routable.
Inbound_sg_Drop	Number of SA messages denied by the inbound SG filter for the peer.
Inbound_rp_Drop	Number of SA messages denied by the inbound RP filter for the peer.
Outbound_sg_Drop	Number of SA messages denied by the outbound SG filter for the peer.
Outbound_rp_Drop	Number of SA messages denied by the outbound RP filter for the peer.

Examples

The following example displays output for the show ip msdp peer command, including TCP keychain (AO) options.

```
device# show ip msdp  peer
        IP Address           State       Mesh-group-name
1       10.10.10.1           ESTABLISH
        Keep Alive Time  Hold Time   Age
        60               75          9
                             Message Sent         Message Received
        Keep Alive           18639                18634
        Notifications        0                    0
        Source-Active        0                    0
        Lack of Resource     0
        Last Connection Reset Reason:Reason Unknown
        Notification Message Error Code Received:Unspecified
        Notification Message Error SubCode Received:Not Applicable
        Notification Message Error Code Transmitted:Unspecified
        Notification Message Error SubCode Transmitted:Not Applicable
        Local IP Address:  10.10.10.2
        AO Keychain name:  chain4new
        TCP Connection state: ESTABLISHED

     TCP Keychain name      : chain4new
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : HMAC-SHA1
       Send-id              : 255
       Recv-id              : 255
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : HMAC-SHA1
       Send-id              : 255
       Recv-id              : 255
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
          Local host:  10.10.10.2, Local  Port: 639
          Remote host: 10.10.10.1, Remote Port: 8746
          ISentSeq: 4196729273  SendNext: 4196785191  TotUnAck:          0
          SendWnd:       16384  TotSent:       55918  ReTrans:        264
          IRcvSeq:  1236641563  RcvNext:  1236697466  RcvWnd:       16384
          TotalRcv:      55903  RcvQue:            0  SendQue:          0
        Input SA Filter:Not Applicable
        Input (S,G) route-map:None
        Input RP route-map:None
        Output SA Filter:Not Applicable
        Output (S,G) route-map:None
        Output RP route-map:None
       SA message Drops:
                Bad_length        : 0
                Invalid_VrfIdx    : 0
                Rpf_Failure_Drop  : 0
                Wrong_group_Drop  : 0
                Inbound_sg_Drop   : 0
                Inbound_rp_Drop   : 0
                Outbound_sg_Drop  : 0
                Outbound_rp_Drop  : 0
```

History

Release version	Command history
08.0.92	The output for this command was modified to display information for drop counters.
09.0.10	The command output was modified to include TCP keychain (AO) options.

show ip msdp rpf-peer

Displays Multicast Source Discovery Protocol (MSDP) peer information for a reverse-path forwarding (RPF) peer.

Syntax

show ip msdp [**vrf** *vrf-name*] **rpf-peer** *peer-address*

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

peer-address

Specifies the source address for reverse-path forwarding (RPF) check.

Modes

Privileged EXEC mode

Examples

The following example shows MSDP peer information for the VRF named my_vrf.

```
device#show ip msdp vrf my_vrf rpf-peer 10.40.40.2
MSDP Peer Status Summary
KA: Keepalive SA:Source-Active NOT: Notification
 Peer Address    Peer As    State           KA           SA           NOT        Age
                                          In     Out    In     Out    In    Out
10.40.40.2      1001       ESTABLISH    5569   5568   0      0      0      0      57
```

show ip msdp sa-cache

Displays the source actives (SA) in the Multicast Source Discovery Protocol (MSDP) cache.

Syntax

show ip msdp [**vrf** *vrf-name*] **sa-cache** [**counts**] [*source-address group-address* | **peer** *peer-address* { **in** | **out** } | **peer-as** *as-number* | **orig-rp** *rp-address* | **rejected** [**rpf** | **rp-filter** | **sg-filter**] | **self-originated**]

Parameters

vrf *vrf-name*
Displays information for a specific VRF instance.

counts
Displays only the count of entries.

source-address
Specifies the source address of the SA entry.

group-address
Specifies the group address of the SA entry.

peer-as *as-number*
Specifies the BGP any-source (AS) number of the forwarding peer.

orig-rp *rp-address*
Displays information for the originating reverse-path (RP) address.

peer *peer-address*
Displays information for the peer address.

in
Displays SA entries received from this peer.

out
Displays SA entries advertised to this peer.

rejected
Displays the rejected SAs.

rpf
Displays the RPF failure information.

rp-filter
Displays the RP filter failure information.

sg-filter
Displays the SG failure information.

self-originated
Displays the self-originated SAs.

Modes

User EXEC mode

Command Output

The **show ip msdp sa-cache** command displays the following information:

Output Field	Description
Total	The number of entries the cache currently contains.
Index	The cache entry number.
RP	The RP through which receivers can access the group traffic from the source
SourceAddr	The IP address of the multicast source.
GroupAddr	The IP multicast group to which the source is sending information.
Orig Peer	The peer from which this source-active entry was received.
Age	The number of seconds the entry has been in the cache

Examples

This example shows the source actives in the MSDP cache:

```
device> show ip msdp vrf my_vrf sa-cache
 Total of 10 SA cache entries
Index  RP address (Source, Group)          Orig Peer  Age
1      2.2.2.2    (192.6.1.10, 227.1.1.1)  192.1.1.2  0
2      2.2.2.2    (192.6.1.10, 227.1.1.2)  192.1.1.2  0
3      2.2.2.2    (192.6.1.10, 227.1.1.3)  192.1.1.2  0
4      2.2.2.2    (192.6.1.10, 227.1.1.4)  192.1.1.2  0
5      2.2.2.2    (192.6.1.10, 227.1.1.5)  192.1.1.2  0
6      2.2.2.2    (192.6.1.10, 227.1.1.6)  192.1.1.2  0
7      2.2.2.2    (192.6.1.10, 227.1.1.7)  192.1.1.2  0
8      2.2.2.2    (192.6.1.10, 227.1.1.8)  192.1.1.2  0
9      2.2.2.2    (192.6.1.10, 227.1.1.9)  192.1.1.2  0
10     2.2.2.2    (192.6.1.10, 227.1.1.10) 192.1.1.2  0
```

The following example configures to display only the entries matching a specific source.

```
device> show ip msdp sa-cache 1.1.1.1
```

The following example configures to display only the entries matching a specific group.

```
device> show ip msdp sa-cache 239.1.1.1
```

The following example configures to display only the SA cache entries that are received from peers in the BGP AS Number 100.

```
device> show ip msdp sa-cache 100
```

The following example configures to display only the SA cache entries that are originated by the RP 10.1.1.1.

```
device> show ip msdp sa-cache orig-rp 10.1.1.1
```

The following example configures to display only the rejected SAs. You can further narrow down by quoting the reason for rejection.

```
device> show ip msdp sa-cache rejected
```

The following example configures to display the self-originated SA.

```
device> show ip msdp sa-cache self-originated
```

show ip msdp summary

Displays the IP addresses of the Multicast Source Discovery Protocol (MSDP) peers, the state of the device MSDP session with each peer, and statistics for keepalive, source active, and notification messages sent to and received from each of the peers.

Syntax

show ip msdp [**vrf** *vrf-name*] **summary**

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

Modes

Privileged EXEC mode

Command Output

The **show ip msdp summary** command displays the following information:

Output Field	Description
Peer address	The IP address of the peer interface with the device
State	The state of the MSDP device connection with the peer. The state can be one of the following: • CONNECTING - The session is in the active open state. • ESTABLISHED - The MSDP session is fully up. • INACTIVE - The session is idle. • LISTENING - The session is in the passive open state.
KA In	The number of MSDP keepalive messages the MSDP device has received from the peer
KA Out	The number of MSDP keepalive messages the MSDP device has sent to the peer
SA In	The number of source active messages the MSDP device has received from the peer
SA Out	The number of source active messages the MSDP device has sent to the peer
NOT In	The number of notification messages the MSDP router has received from the peer
NOT Out	The number of notification messages the MSDP router has sent to the peer

Examples

The following example shows summary MSDP information for the VRF named my_vrf.

```
device# show ip msdp my_vrf summary
MSDP Peer Status Summary
KA: Keepalive SA:Source-Active NOT: Notification
Peer Address    Peer As    State         KA           SA            NOT        Age
                                       In     Out    In     Out    In     Out
40.40.40.1      1001       ESTABLISH 59     59     0      0      0      0      6
40.40.40.3      1001       ESTABLISH 59     59     0      0      0      0      47
47.1.1.2        N/A        ESTABLISH 59     59     0      0      0      0      47
```

show ip multicast

Displays IPv4 IGMP snooping information.

Syntax

show ip multicast

Modes

User EXEC mode

Usage Guidelines

You can use the **show ip multicast** command to display information for VLANs.

Examples

The following example shows IGMP snooping information.

```
device# show ip multicast
Summary of all vlans. Please use "sh ip mu vlan <vlan-id>" for details
Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

Replication resource sharing: Enabled.
VL20: dft V2, vlan cfg active, 0 grp, 0 (*G) cache, rtr ports,
    router ports: e1/1/5(220) 1.1.1.20,
My Query address: None
Vlan Querier address not configured. Ve/Loopback address also not available.
VL30: dft V2, vlan cfg active, 0 grp, 0 (*G) cache, no rtr port,
Vlan Querier address configured: 30.1.1.1
VL40: dft V2, vlan cfg passive, 0 grp, 0 (*G) cache, no rtr port,
Vlan Querier address not configured. Ve/Loopback address also not available.
VL120 no snoop: no global or local config
VL200 no snoop: no global or local config
```

History

Release version	Command history
08.0.50	The output of this command was modified to display the robustness variable, leave-wait timer, and the My Query address field.
08.0.30	This command was modified to display information for unregistered flooding.

show ip multicast cluster mcache

Displays information in the multicast forwarding mcache.

Syntax

show ip multicast cluster mcache [*ip-address*]

show ip multicast cluster mcache [**vlan** *vlan-id*] [*ip-address*]

Parameters

cluster

Specifies a Multi-Chassis Trunking (MCT) cluster.

ip-address

Specifies an IP address.

vlan *vlan-id*

Specifies a VLAN.

Modes

User EXEC mode

Usage Guidelines

The IGMP snooping mcache contains multicast forwarding information for VLANs, and you must use the **show ip multicast mcache** command to display multicast forwarding information for VLANs..

Command Output

The **show ip multicast mcache** command displays the following information:

Output Field	Description
(source group)	The source and group addresses of this data stream. (* group) means match group only; (source group) means match both. For snooping when it is mac-based, Only *,G entries will be present in multicast mcache output for ipv4 and ipv6. S,G entries will not be present.
MAC address	The multicast MAC address. If the device supports MAC-based IGMP snooping, the MAC address is matched for forwarding decision.
IPv4 Multicast Forwarding Mode	This option is dynamic. If snooping is MAC-based, MAC will be displayed and if it is IP-based then IP is displayed.
cnt	The number software-processed packets.
static	Static mulitcast addresses
flood	Flooded traffic.
drop	Dropped traffic.

Output Field	Description
OIF	The output interfaces. Static groups apply to the entire VLAN if "entire vlan" is displayed.
age	The age of the mcache. The mcache will be reset to 0 if traffic continues to arrive; otherwise the mcache will be aged out when it reaches the time defined by the **ip multicast mcache-age** command.
up-time	The uptime of this mcache in seconds.
ref-cnt	Indicates the number of mcaches using the VIDX. The VIDX is shared among mcaches having the same output interfaces.

Examples

The following example shows information in the multicast forwarding mcache.

```
device> show ip multicast mcache

Example:
    (S G) (MAC ADDR) cnt=: SRC and GRP IPv4/IPv6 address,
    Multicast Mac address, cnt is number of SW processed packets
    OIF: 1/1/22 TR(1/1/32,1/1/33), TR is trunk, 1/1/32 primary, 1/1/33 output
IPv4 Multicast Forwarding Mode: MAC

Total Multicast Cache: 10
vlan 4089, 10 caches.
1    (* 225.1.1.1) (0100.5e01.0101) cnt=97
     OIF: tag e1/1/2
     age=3s up-time=4372s, change=448s l2mc=257 (ref-cnt=1)
2    (* 236.1.1.8) (0100.5e01.0108) cnt=4
     OIF: tag e1/1/2
     age=9s up-time=4372s, change=439s l2mc=257 (ref-cnt=1)
```

The following example shows information in the multicast forwarding mcache on MCT cluster device.

```
device> show ip multicast cluster mcache

Example:
    (S G) (MAC ADDR) cnt=: SRC and GRP IPv4/IPv6 address,
    Multicast Mac address, cnt is number of SW processed packets
    OIF: 1/1/22 TR(1/1/32,1/1/33), TR is trunk, 1/1/32 primary, 1/1/33 output
         [1,10]: [1 - has local oif, 10 - ICL due to CCEP count]
IPv4 Multicast Forwarding Mode: IP
Total Multicast Cache: 1
vlan 11, 1 caches.
1    (192.85.1.44 225.1.1.1) (0100.5e01.0101) cnt=2
     OIF: tag e1/1/35 [1,0] tag lg130 [0,1] tag e1/1/5 [1,0] tag lg1 [1,0]
     age=28s up-time=28s, change=28s ipmc=361 (ref-cnt=1)
```

The following example displays information in the multicast forwarding mcache, including static mcache profile information and flooded and dropped mcaches.

```
device> show ip multicast cluster mcache

Example:
(S G) (MAC ADDR) cnt=: SRC and GRP IPv4/IPv6 address,
Multicast Mac address, cnt is number of SW processed packets
OIF: 1/1/22 TR(1/1/32,1/1/33), TR is trunk, 1/1/32 primary, 1/1/33 output
IPv4 Multicast Forwarding Mode: IP
Total Multicast Cache: 13
vlan 10, 3 caches.
1 (* 225.0.0.2) (0100.5e00.0002) cnt=0
OIF: flood
age=5s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
2 (* 225.1.2.250) (0100.5e01.02fa) cnt=0
OIF: flood
age=20s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
3 (* 225.0.1.10) (0100.5e00.010a) cnt=0
OIF: drop
age=0s up-time=3739s, change=3739s ipmc=0 (ref-cnt=1) static

vlan 20, 7 caches.
1 (* 239.255.255.253) (0100.5e7f.fffd) cnt=0
OIF: flood
age=20s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
2 (* 224.0.1.129) (0100.5e00.0181) cnt=0
OIF: flood
age=5s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
3 (* 224.0.1.130) (0100.5e00.0182) cnt=0
OIF: flood
age=27s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
4 (* 239.255.255.250) (0100.5e7f.fffa) cnt=0
OIF: flood
age=18s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
5 (* 224.0.1.1) (0100.5e00.0101) cnt=0
OIF: flood
age=0s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
6 (* 224.0.1.132) (0100.5e00.0184) cnt=0
OIF: flood
age=11s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
7 (* 224.0.1.131) (0100.5e00.0183) cnt=0
OIF: flood
age=12s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
vlan 30, 3 caches.
1 (* 225.0.0.2) (0100.5e00.0002) cnt=0
OIF: flood
age=5s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
2 (* 225.1.2.250) (0100.5e01.02fa) cnt=0
OIF: flood
age=20s up-time=3739s, change=3739s ipmc=2 (ref-cnt=1) static
3 (* 225.0.1.10) (0100.5e00.010a) cnt=0
OIF: drop
age=0s up-time=3739s, change=3739s ipmc=0 (ref-cnt=1) static
```

History

Release version	Command history
08.0.20	This command was modified to display Multi-Chassis Trunking (MCT) cluster information.
08.0.92	The command output was modified.
09.0.00	The command output was modified to include information for static mcache profile infomration and flooded and dropped mcaches.

show ip multicast data-plane

Displays multicast Internet Group Management Protocol (IGMP) data-plane information.

Syntax

show ip multicast data-plane {**mcache** | **mcache-count** | **settings** | **vlan** *vlan-id* }

Parameters

mcache

Specifies the data-plane mcache.

mcache-count

Specifies ithe data-plane mcache count.

settings

Specifies the data-plane IGMP snooping settings.

vlan *vlan-id*

Specifies a VLAN.

Modes

User EXEC mode

Command Output

The **show ip multicast data-plane** command displays the following information:

Output Field	Description
in-HW:	Indicates if traffic flow is programmed in hardware.
Aging	Indicates the time remaining (Agebit).
Perm	The static mcache.
Epoch	Indicates the number of times the mcache table reconciled with the Active-CP.
Total Number of v4 DP Mcache Entries	Indicates the total number of data-plane mcache entries.
Insert Failure	Indicates if failure occurred.
Vlan-id	The ID of the VLAN.
snoop	Indicates if IP Multicast snooping is enabled.
pimsmsnoop	Indicates if PIM SM snooping is enabled.
use-sg	0: Use *,G-based forwarding 1: Use S,G-based forwarding
unreg-flood	Indicates if unregistered or unknown multicast flooding is enabled.
Mode	IP or MAC, based on forwarding table used for programming the mcache.
Local Slave Sync State	Name of sync channel used between CP and DP
Local	Indicates if the sync channel is on local unit (value 1) or remote unit.

Output Field	Description
repl user id	User ID.
Init	Indicates the module is initialized.
dysync type	Sync channel ID
alloc	Number of mcache pools that can be allocated.
in-use	Number of mcache pools currently in use.
avail	Number of available mcache pools.
get-fail	Memory get failed counter.
limit	Maximum entires allowed to be allocated dynamically.
get-mem	Memory allocated call counter.
size	Individual entry size.

Examples

The following example shows information for the IP multicast IGMP data-plane mcache.

```
device# show ip multicast data-plane mcache

1 (*, 225.0.0.1, 20, 0) -> 0, in-HW: Yes, Aging: 160(0x2), Perm: No, Epoch: 11
Total Number of v4 DP Mcache Entries: 1, Insert Failure: 0
```

The following example shows information for the IP multicast IGMP data-plane mcache count.

```
device# show ip multicast data-plane mcache-count

Total Number of v4 DP Mcache Entries: 1, Insert Failure: 0
```

The following example shows information for the IP multicast IGMP data-plane for all VLANs.

```
device# show ip multicast data-plane vlan

Summary of all vlans.
Vlan-id:20 snoop:Yes pimsmsnoop:No use-sg:0 unreg-flood:No
```

The following example shows information for the data-plane IGMP snooping settings.

```
device# show ip multicast data-plane settings

Global State:
--------------
Mode :IP Aging :180 Unreg Flood :0
Local Slave Sync State: MSNOOP-DP
-----------------------------------------
Local :1 epoc :10 repl user id :3
Init :1 dysync type :46
Resources:
---------------------------
            alloc in-use avail get-fail limit get-mem size init
mcache-pool 128     10    118    0      29696 10      84   128
```

History

Release version	Command history
10.0.00	This command was introduced.

show ip multicast error

Displays information about possible IGMP errors.

Syntax

show ip multicast error

Modes

User EXEC mode

Command Output

The **show ip multicast error** command displays the following information:

Output Field	Description
SW processed pkt	The number of multicast packets processed by IGMP snooping.
up-time	The time since the IGMP snooping is enabled.

Examples

The following example shows information about possible IGMP errors.

```
device> show ip multicast error
snoop SW processed pkt: 173, up-time 160 sec
```

show ip multicast group

Displays information about IGMP groups.

Syntax

show ip multicast[**cluster**]**group**[*group-address*[**detail**][**tracking**]]

Parameters

cluster

Specifies a multi-chassis trunking (MCT) cluster.

group-address

Specifies information for a particular group.

detail

Specifies detailed IGMP group information for a specific group.

tracking

Specifies tracking information on interfaces that have tracking enabled.

Modes

Privileged EXEC mode

Command Output

The **show ip multicast group** command displays the following information:

Output Field	Description
group	The address of the group (destination address in this case, 224.1.1.1)
p-port	The physical port on which the group membership was received.
ST	**Yes** indicates that the IGMP group was configured as a static group; **No** means the address was learned from reports.
QR	**Yes** means the port is a querier port; No means it is not. A port becomes a non-querier port when it receives a query from a source with a lower source IP address than the device.
life	The number of seconds the group can remain in EXCLUDE mode. An EXCLUDE mode changes to INCLUDE mode if it does not receive an "IS_EX" or "TO_EX" message during a certain period of time. The default is 260 seconds. There is no life displayed in INCLUDE mode.
mode	Indicates current mode of the interface: INCLUDE or EXCLUDE. If the interface is in INCLUDE mode, it admits traffic only from the source list. If an interface is in EXCLUDE mode, it denies traffic from the source list and accepts the rest.
source	Identifies the source list that will be included or excluded on the interface. For example, if an IGMP V2 group is in EXCLUDE mode with a source of 0, the group excludes traffic from the 0 (zero) source list, which actually means that all traffic sources are included.

Examples

The following example shows that an IGMP V2 group is in EXCLUDE mode with a source of 0. The group excludes only traffic from the 0 (zero) source list, which means that all traffic sources are included.

```
device# show ip multicast group

p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL70 : 3 groups, 4 group-port, tracking_enabled
      group            p-port   ST     QR     life mode    source
1     224.1.1.2        1/1/33   no     yes    120  EX      0
2     224.1.1.1        1/1/33   no     yes    120  EX      0
3     226.1.1.1        1/1/35   yes    yes    100  EX      0
4     226.1.1.1        1/1/33   yes    yes    100  EX      0
```

The following example displays detailed IGMP group information for multicast group 226.1.1.1:

```
device# show ip multicast group 226.1.1.1 detail

Display group 226.1.1.1 in all interfaces in details.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL70 : 1 groups, 2 group-port, tracking_enabled
      group            p-port   ST     QR     life mode    source
1     226.1.1.1        1/1/35   yes    yes    120  EX      0
    group: 226.1.1.1, EX, permit 0 (source, life):
      life=120, deny 0:
      group            p-port   ST     QR     life mode    source
2     226.1.1.1        1/1/33   yes    yes    120  EX      0
    group: 226.1.1.1, EX, permit 0 (source, life):
      life=120, deny 0:
```

The following example displays the list of clients that belong to multicast group 224.1.1.1 when tracking and fast leave are enabled:

```
device# show ip multicast group 224.1.1.1 tracking

Display group 224.1.1.1 in all interfaces with tracking enabled.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL70 : 1 groups, 1 group-port, tracking_enabled
      group            p-port   ST     QR     life mode    source
*** Note: has 1 static groups to the entire vlan, not displayed here
1     224.1.1.1        1/1/33   no     yes    100  EX      0
    receive reports from 1 clients: (age)
      (10.2.100.2 60)
```

The following example displays information for a device in an MCT cluster, In the “local” column, YES indicates that report/leave were received on local ports [cluster-edge ports (CEP) or cluster-client-edge ports (CCEP)]; NO indicates that report/leave were received on a port that is an inter-chassis link (ICL) between the MCT cluster switches, via an MCT peer.

```
device# show ip multicast cluster group

p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL70 : 1 groups, 1 group-port
      group            p-port   ST     QR     life  mode    source     local
1     225.1.1.1        e1/3/10  no     no     260   EX      0          YES
2     230.1.1.2        e1/3/12  no     yes    40    EX      0          NO
```

The following example displays information about IGMP groups including whether or not if tracking has been enabled for IGMPv2 using the **multicast sdvoe auto-edge-port-track-act** or **multicast sdvoe auto-edge-port-track-pas** command.

```
device# show ip multicast group 225.1.1.1 tracking

    Display group 225.1.1.1  for all vlans on all ports with tracking enabled.
    p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
    VL11 : 1 groups, 1 group-port, tracking_enabled
              group            p-port      ST     QR     life  mode    source
    1   225.1.1.1        lg1          no     no     1000  EX      0
           receive reports from 1 clients:
               (11.3.1.3 (0))
```

History

Release version	Command history
08.0.20	This command was modified to display MCT cluster information.

show ip multicast group match-last-bits

Displays the groups that share the specified number of lowest bits to match with group address for all VLANs on all ports.

Syntax

show ip multicast group *group-address* **match-last-bits** *decimal*

Parameters

group-address

Specifies information for a particular group.

match-last-bits *decimal*

Specifies the number of lowest bits to match with the group address. Valid values range from 1 through 32. To match the same MAC address use 23.

Modes

User EXEC mode

Privileged EXEC mode

Command Output

The **show ip multicast group match-last-bits** command displays the following information:

Output Field	Description
group	The address of the group.
p-port	The physical port on which the group membership was received.
ST	**Yes** indicates that the IGMP group was configured as a static group; **No** means the address was learned from reports.
QR	**Yes** means the port is a querier port; No means it is not. A port becomes a non-querier port when it receives a query from a source with a lower source IP address than the device.
life	The number of seconds the group can remain in EXCLUDE mode. An EXCLUDE mode changes to INCLUDE mode if it does not receive an "IS_EX" or "TO_EX" message during a certain period of time. The default is 260 seconds. There is no life displayed in INCLUDE mode.
mode	Indicates current mode of the interface: INCLUDE or EXCLUDE. If the interface is in INCLUDE mode, it admits traffic only from the source list. If an interface is in EXCLUDE mode, it denies traffic from the source list and accepts the rest.
source	Identifies the source list that will be included or excluded on the interface. For example, if an IGMP V2 group is in EXCLUDE mode with a source of 0, the group excludes traffic from the 0 (zero) source list, which actually means that all traffic sources are included.

Examples

The following example shows the groups that shares the same MAC address with group address for all VLANs on all ports.

```
device# show ip multicast group 225.1.1.1 match-last-bits 23
Display groups sharing same mac address 0100.5e01.0101 with group 225.1.1.1 for all vlans on all ports.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL4089 : 11 groups, 11 group-port
      group           p-port      ST     QR     life  mode    source
1     236.1.1.1       e1/1/2      no     no     260   EX      0
2     233.1.1.1       e1/1/2      no     no     240   EX      0
3     226.1.1.1       e1/1/2      no     no     260   EX      0
4     227.1.1.1       e1/1/2      no     no     240   EX      0
5     228.1.1.1       e1/1/2      no     no     260   EX      0
6     232.1.1.1       e1/1/2      no     no     260   EX      0
7     229.1.1.1       e1/1/2      no     no     240   EX      0
8     231.1.1.1       e1/1/2      no     no     240   EX      0
9     230.1.1.1       e1/1/2      no     no     240   EX      0
10    225.1.1.1       e1/1/2      no     no     240   EX      0
11    234.1.1.1       e1/1/2      no     no     260   EX      0
```

The following example shows the specified number of lowest bits to match with group address for all VLANs on all ports.

```
device# show ip multicast group 225.1.1.1 match-last-bits 21
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL4089 : 11 groups, 11 group-port
      group           p-port      ST     QR     life  mode    source
1     236.1.1.1       e1/1/2      no     no     240   EX      0
2     233.1.1.1       e1/1/2      no     no     220   EX      0
3     226.1.1.1       e1/1/2      no     no     240   EX      0
4     227.1.1.1       e1/1/2      no     no     220   EX      0
5     228.1.1.1       e1/1/2      no     no     240   EX      0
6     232.1.1.1       e1/1/2      no     no     240   EX      0
7     229.1.1.1       e1/1/2      no     no     220   EX      0
8     231.1.1.1       e1/1/2      no     no     220   EX      0
9     230.1.1.1       e1/1/2      no     no     220   EX      0
10    225.1.1.1       e1/1/2      no     no     220   EX      0
11    234.1.1.1       e1/1/2      no     no     240   EX      0
```

History

Release version	Command history
08.0.92	This command was introduced.

show ip multicast mcache

Displays information for the IP multicast forwarding mcache.

Syntax

show ip multicast [**cluster**] **mcache** [*group-address* | **vlan** *vlan-id*]

Parameters

cluster

Specifies a Multi-Chassis Trunking (MCT) cluster.

group-address

Specifies the address of the multicast group.

vlan *vlan-id*

Specifies a VLAN.

Modes

User EXEC mode

Command Output

The **show ip multicast mcache** command displays the following information:

Output Field	Description
(source group):	The source and group addresses of this data stream. (* group) means match group only; (source group) means match both. For snooping when it is MAC-based, only *,G entries will be present in multicast mcache output for IPv4 and IPv6. S,G entries will not be present.
cnt	The number of packets processed in software.
OIF	The outgoing interface list.
age	The mcache age in seconds. The mcache is reset to 0 if traffic continues to arrive; otherwise, the mcache is aged out when it reaches the time defined by the **ipv6 multicast mcache-age** command.
up-time	The uptime of this mcache in seconds.
impc (or l2mc)	The hardware entry which has the list of replication ports. **NOTE** For ICX 7550, ICX 7650, and ICX 7850 devices, **l2mc** is replaced with **ipmc** in the output.
ref-cnt	The number of mcaches using this IPMC.
AgeMask	Stacking unit ID where traffic flow is active (traffic ingression).
HwFailMask	Stacking unit ID where traffic flow is not programmed in the hardware. This field is displayed only when there is a failure.

Examples

The following example shows information for the IP multicast forwarding mcache, including information for stacking units where traffic flow is active, or where a failure has occurred.

```
device> show ip multicast mcache

(S G) (MAC ADDR) cnt=: SRC and GRP IPv4/IPv6 address,
Multicast Mac address, cnt is number of SW processed packets
OIF: 1/1/22 TR(1/1/32,1/1/33), TR is trunk, 1/1/32 primary, 1/1/33 output
IPv4 Multicast Forwarding Mode: IP
Total Multicast Cache: 10
vlan 20, 1 caches.
1 (* 225.0.0.1) (0100.5e00.0009) cnt=76
OIF:
age=188s up-time=12s, change=12s ipmc-0 AgeMask=0x3 HwFailMask=0x3
```

History

Release version	Command history
10.0.00	The output of this command was modified to include information for stacking units where traffic flow is active, or where a failure has occurred.

show ip multicast mvr mvlan

Displays MVLAN to group mapping details.

Syntax

show ip multicast mvr mvlan [*mvlan-id* | **group-map** *mvr-grp-addr* }

Parameters

mvlan *mvlan-id*

Displays information about the MVR source VLAN.

group-map

Displays MVR group mapping details.

mvr-grp-addr

Specifies the IP address of MVR group.

Modes

User EXEC mode

Examples

The following example displays MVLAN to group mapping details.

```
device# show ip multicast mvr mvlan group-map

MVLAN      count/             Start Group        End Group
           Range               Address           Address
---------+------------+-------------------+------------------
10         1           225.0.0.1                 225.0.0.1
11         10          226.0.0.1                 226.0.0.10
11         range       228.0.0.1                 228.0.0.10
12         1           229.0.0.2                 229.0.0.2
```

The following example displays information about mapping of a specific MVLAN to group.

```
device# show ip multicast mvr mvlan 11 group-map

MVLAN      count/           Start Group           End Group
           Range             Address               Address
---------+------------+-------------------+------------------
11          10            226.0.0.1             226.0.0.10
11          range         228.0.0.1             228.0.0.10
```

The following example displays information about MVR based on the multicast group address assigned to the MVLAN.

```
device# show ip multicast mvr mvlan group-map 226.0.0.1

MVLAN      count/           Start Group      End Group
           Range             Address         Address
---------+------------+-------------------+------------------
11         10            226.0.0.1           226.0.0.10
```

History

Release version	Command history
09.0.10	The command was introduced.

show ip multicast optimization

Displays Internet Group Management Protocol (IGMP) snooping hardware resource-sharing information.

Syntax

show ip multicast optimization[*ipmc-num*]

Parameters

ipmc-num

Specifies the IP multicast (IPMC) group index number.

Modes

Privileged EXEC mode

VLAN configuration mode

Usage Guidelines

Use this command to display the availability of IPMC group indexes in the hardware and how they are used and shared.

The IPMC group index range varies depending on the platform; values out of range are not displayed.

Examples

The following example displays resource information showing that IPMC group index 4 is shared by two users and the ports included in the set are 1/1/6 and 1/1/1:

```
Device(config)#vlan 150
Device(config-vlan-150)#show ip multicast optimization
Total IPMCs Allocated:    0; Available: 8192; Failed:    0
Index    IPMC          SetId          Users          Set
   1.    4              0x161fcbd8        2 {<1/1/6>,<1/1/1>,}
   2.    1              0x161d0930       10 {<1/1/6>,<1/1/4>,<1/1/3>,<1/1/2>,
                                            <1/1/1>,}
Sharability Coefficient:  76%
```

History

Release version	Command history
08.0.10	This command was introduced.

show ip multicast pimsm-snooping

Displays information related to PIM sparse mode (SM) snooping on the mcache.

Syntax

show ip multicast pimsm-snooping [**cache** *ip-address*] [**vlan** *vlan-id*] | [**resources**]

Parameters

cache *ip-address*

Specifies the PIM SM Snooping cache.

vlan *vlan-id*

Specifies a VLAN.

resources

Specifies PIM SM snooping resources.

Modes

Privileged EXEC mode

Examples

The following example shows PIM SM information.

```
device> show ip multicast pimsm-snooping

Example: Port: 1/7/3 (ref_count=1)
         ref_count: no of entries in pimsm snoop cache added this oif)

vlan 503, has 1 caches.
1     (* 225.1.1.1) has 3 pim join ports out of 4 OIF
      4/23 (ref_count=2), 4/13 (ref_count=1), 4/5 (ref_count=3),
```

The following example shows PIM SM information for a specified VLAN.

```
device> show ip pimsm-snooping vlan 111

 OIF Info:
 TR - OIF Belongs to Trunk/LAG, Lag Interface is displayed
 SG - (s,g) downstream fsm state:
 G - (*,g) downstream fsm state:
     NI : No Info, J : Join, PP : Prune Pending, CLEAN : cleanup in progress
 RPT - (s,g,rpt) downstream fsm state:
     NI : No Info, P : Pruned, PP : Prune Pending, Px : Temp step in (*,G)
     join processing, PPx : Temp State in (*,G) processing, CLEAN : cleanup
     in progress.

PIMSM Snoop cache for vlan 111, has 240 cache
1       (* 225.1.51.1) Up Time: 00:40:48
         OIF: 1
         lg1 G : J(163) ET: 210, Up Time: 00:40:48
```

show ip multicast resource

Displays information about the software resources used.

Syntax

show ip multicast resource

Modes

User EXEC mode

Command Output

The **show ip multicast resource** command displays the following information:

Output Field	Description
alloc	The allocated number of units.
in-use	The number of units currently being used.
avail	The number of available units.
get-fail	Thie number of resource failures. **NOTE** It is important to pay attention to this field.
limit	The upper limit of this expandable field. The limit of `multicast group` is configured by the **system-max igmp-snoop-group-addr** command. The limit of `snoop mcache entry` is configured by the **system-max igmp-snoop-mcache** command.
get-mem	The number of memory allocation.
size	The size of a unit (in bytes).
init	The initial allocated amount of memory. More memory may be allocated if resources run out.

Examples

The following example shows information about the software resources.

```
device> show ip multicast resource
                     alloc in-use  avail get-fail    limit  get-mem  size init
igmp group             256      1    255        0    32000        1    16  256
igmp phy port         1024      1   1023        0   200000        1    22 1024
.... entries deleted ...
snoop mcache entry     128      2    126        0     8192        3    56  128
total pool memory 109056 bytes
has total 2 forwarding hash
```

show ip multicast static-mcache-profile

Displays information of IP Multicast static-mache profile.

Syntax

show ip multicast static-mcache-profile [*profile-id* | **default-profile**]

Parameters

profile-id

Specifies a profile.

default-profile

Specifies the profile of special groups.

Modes

User EXEC

Command Output

The **show ip multicast static-mcache-profile** command displays the following information:

Output field	Description
profile-id	Configured profiles.
num of groups	Number of configured groups.
vlans	Configured VLANs.
Group	Configured groups.
Fwd-mode	Forwarding mode. Status can be Drop or Flood.

Examples

The following example shows static mcache information for a configured profile.

```
device# show ip multicast static-mcache-profile 10

profile-id: 10, num of groups: 3, vlans: 10,
     Group             Fwd-mode
1    225.0.0.2         Flood
2    225.1.2.250       Flood
3    225.0.1.10        Drop
```

The following examples shows information about the profile of SDVoE groups.

```
device# show ip multicast static-mcache-profile default-profile

profile-id: Default profile, num of groups: 7, vlans: 20,
     Group             Fwd-mode
1    239.255.255.253   Flood
2    239.255.255.250   Flood
3    224.0.1.132       Flood
4    224.0.1.131       Flood
5    224.0.1.130       Flood
6    224.0.1.129       Flood
7    224.0.1.1         Flood
```

History

Release version	Command history
09.0.00	This command was introduced.

show ip multicast traffic

Displays status information for IGMP snooping traffic.

Syntax

show ip multicast traffic

Modes

User EXEC mode

Command Output

The **show ip multicast traffic** command displays the following information:

Output Field	Description
Q	Query
Qry	General Query
QryV2	Number of general IGMP V2 queries received or sent.
QryV3	Number of general IGMP V3 queries received or sent.
G-Qry	Number of group-specific queries received or sent.
GSQry	Number of group source-specific queries received or sent.
Mbr	The membership report.
MbrV2	The IGMP V2 membership report.
MbrV3	The IGMP V3 membership report.
IsIN	Number of source addresses that were included in the traffic.
IsEX	Number of source addresses that were excluded in the traffic.
ToIN	Number of times the interface mode changed from EXCLUDE to INCLUDE.
ToEX	Number of times the interface mode changed from INCLUDE to EXCLUDE.
ALLOW	Number of times that additional source addresses were allowed on the interface.
BLOCK	Number of times that sources were removed from an interface.
Pkt-Err	Number of packets having errors, such as checksum.
Pimsm-snooping hello, join, prune	Number of PIM sparse hello, join, and prune packets

Examples

The following example shows information for IGMP snooping traffic.

```
device> show ip multicast traffic

IGMP snooping: Total Recv: 22, Xmit: 26
Q: query, Qry: general Q,  G-Qry: group Q,  GSQry: group-source Q, Mbr: member
Recv       QryV2     QryV3     G-Qry     GSQry     MbrV2     MbrV3     Leave
VL1            0         0         0         0         4         0         0
VL70          18         0         0         0         0         0         0
Recv        IsIN      IsEX      ToIN      ToEX     ALLOW     BLOCK   Pkt-Err
VL1            0         4         0         0         0         0         0
VL70           0         0         0         0         0         0         0
Send       QryV2     QryV3     G-Qry     GSQry     MbrV2     MbrV3
VL1            0         0         8         0         0         0
VL70           0         0         0         0         0        18
VL70   pimsm-snooping, Hello:    12,  Join/Prune:     9
```

show ip multicast vlan

Displays Internet Group Management Protocol (IGMP) snooping information for a specific VLAN.

Syntax

show ip multicast [**cluster**] **vlan** *vlan-id group-address*

Parameters

cluster

Specifies a Multi-Chassis Trunking (MCT) cluster.

vlan-id

Specifies the VLAN for which you want information.

group-address

Specifies a group address.

Modes

User EXEC mode

Usage Guidelines

You can use this command to display the querier information for a VLAN. This command displays the VLAN interface status and whether there is any other querier present with the lowest IP address. The following list provides the combinations of querier possibilities:

- Active interface with no other querier present
- Passive interface with no other querier present
- Active interface with other querier present
- Passive interface with other querier present

If you do not specify a VLAN ID, information for all VLANs is displayed.

Command Output

The **show ip multicast vlan** command displays the following information:

Output Field	Description
Version	The global IGMP version.
Query	How often a querier sends a general query on the interface.
Group Age	The number of seconds membership groups can be members of this group before aging out.
MVR	Displays the status of Multicast VLAN Registration (MVR); whether it is enabled or disabled.

Output Field	Description
MVLAN	Displays the dedicated multicast VLAN (MVLAN) specifically for multicast traffic distribution. This VLAN is the MVR source VLAN to which a range of multicast group addresses is assigned.
Max Resp	The maximum number of seconds a client waits before replying to a query.
Other Qr	The length of time it took a switch with a lower IP address to become a new querier.
Unregistered IPv4 Multicast Packets Flooding	Indicates whether flooding is enabled.
cfg	The IGMP version for the specified VLAN.
vlan cfg	The IGMP configuration mode, which is either passive or active.
mvr-s	Indicates the VLAN is configured as a source VLAN.
mvr-r	Indicates the VLAN is configured as a receiver VLAN.
sdvoe	Indicates Software Defined Video-over-Ethernet (SDVoE) is enabled.
fast-leave-edge	Indicates Fast Leave on edge ports is enabled.
sdvoe-auto-edge-port-track-active	Indicates SDVoE is enabled, edge ports are detected automatically, client tracking for IGMPv2 and IGMPv3 is enabled, and query packets are generated.
Edge ports	Lists the edge ports on the device.
Non-edge ports	Lists the configured non-edge ports.
Static Mcache profile id	Lists the configured static mcache profiles. This information is displayed only if a profile is configured or SDVoE is enabled for the VLAN.
passive neighbors	Lists the configured passive neighbors.
pimsm	Indicates that PIM SM is enabled on the VLAN.
rtr port	Indicates whether there are router ports, which are the ports receiving queries.
local	Entries learned on local interfaces of the cluster switch, for example, the local client edge port (CCEP) or cluster edge port (CEP).
mct peer	Entries learned by way of the MCT peer cluster switch. Control messages synchronize by way of the inter-chassis link (ICL) from the MCT peer cluster switch.
Multicast Aging Unit Mask	Stacking unit ID where flow is active (traffic ingression).

Examples

The following example displays MVR-related information for IGMP snooping configurations.

```
device# show ip multicast vlan

Summary of all vlans. Please use "sh ip mu vlan <vlan-id>" for details
Version=2, Intervals: Query=11, Group Age=40, Max Resp=10, Other Qr=27,
Leave Wait=2, Robustness=2

Replication resource sharing: Enabled
Unregistered IPv4 Multicast Packets Flooding: Disabled
MVR: Enabled, MVLAN - 10

VL1: dft V2, vlan cfg passive, mvr-s, 0 grp, 0 (SG) cache, no rtr port
VL10: dft V2, vlan cfg passive, mvr-r, 1 grp, 1 (*G) cache, (dy-1, st-0) rtr ports
```

The following example shows IGMP snooping information when MVR is disabled.

```
device# show ip multicast vlan
Summary of all vlans. Please use "sh ip mu vlan <vlan-id>" for details
Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

Replication resource sharing: Enabled
Unregistered IPv4 Multicast Packets Flooding: Disabled
MVR: Disabled, MVLAN - 0
```

The following example shows IGMP snooping information for a specified VLAN.

```
device# show ip multicast vlan 1

Version=2, Intervals: Query=11, Group Age=40, Max Resp=10, Other Qr=27,
Leave Wait=2, Robustness=2

VL1: dft V2, vlan cfg passive, mvr-s, 0 grp, 0 (SG) cache, no rtr port
My Query address: 1.0.0.24 (ve/loopback)
Edge ports: ALL
Non-Edge ports: NONE

e1/1/1 has 0 grp, non-QR (passive), mvr-s, default V2
e1/1/2 has 0 grp, non-QR (passive), mvr-s, default V2
e1/1/3 has 0 grp, non-QR (passive), mvr-r, default V2
e1/1/4 has 0 grp, non-QR (passive), mvr-r, default V2
```

The following example shows IGMP snooping information when the VLAN interface is active and no other querier is present with the lowest IP address.

```
device> show ip multicast vlan 11

Version=2, Intervals: Query=300, Group Age=620, Max Resp=10, Other Qr=605,
                      Leave Wait=2, Robustness=2

VL11: dft V2, vlan cfg active, 20 grp, 0 (*G) cache, no rtr port,
  My Query address: 1.1.1.1 (ve/loopback)
  e1/2/2    has   20 grp, QR, default V2
    group: 225.1.11.14, life = 520
    group: 225.1.11.6, life = 520
    group: 225.1.11.12, life = 520
    group: 225.1.11.16, life = 520
  lg203     has    0 grp, QR, default V2 trunk
  e31/2/1   has    0 grp, QR, default V2
```

The following example shows IGMP snooping information when the VLAN interface is passive and no other querier is present with the lowest IP address.

```
device> show ip multicast vlan 11

Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL11: dft V2, vlan cfg passive, 0 grp, 0 (*G) cache, no rtr port,
  My Query address: 186.186.186.186 (ve/loopback)
  e1/1/11   has    0 grp, non-QR (passive), default V2
  e1/1/15   has    0 grp, non-QR (passive), default V2
```

The following example shows IGMP snooping information when the VLAN interface is active and another querier is present with the lowest IP address.

```
device> show ip multicast vlan 11
Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL11: dft V2, vlan cfg active, 0 grp, 0 (*G) cache, rtr ports,
    router ports: lg203(160) 1.1.1.1,
  My Query address: 4.4.4.4 (ve/loopback)
  e1/2/8    has    0 grp, QR, default V2
  lg203     has    0 grp, non-QR (QR=1.1.1.1, age=100, mrt=100), default V2 trunk
```

The following example shows IGMP snooping information for a VLAN when SDVoE is enabled..

```
device> show ip multicast vlan 11

Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL11: dft V2, vlan cfg active, sdvoe, fast-leave-edge, 0 grp, 7 (*G) cache, no rtr port
  My Query address: 1.1.1.1 (configured)
  Edge ports: e3/1/31, e3/1/34,
  Non-Edge ports: lg13,
  Static Mcache profile id: Default profile
  e3/1/31   has    0 grp, QR, default V2
  e3/1/34   has    0 grp, QR, default V2
  lg13      has    0 grp, QR, default V2 trunk
```

The following example shows IGMP snooping information for a VLAN when SDVoE auto-edge port is active.

```
device> show ip multicast vlan 11

Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL11: dft V2, sdvoe-auto-edge-port-track-active, 0 grp, 7 (*G) cache, no rtr port
  My Query address: 2.2.2.2 (configured)
  Static Mcache profile id: Default profile
  e3/1/41   has    0 grp, QR, default V2
  e3/1/42   has    0 grp, QR, default V2
  lg24      has    0 grp, QR, default V2 trunk
```

The following example shows IGMP snooping information for a VLAN, including information about edge ports and non-edge ports.

```
device> show ip multicast vlan 11

Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL11: dft V2, vlan cfg active, fast-leave-edge, 0 grp, 0 (*G) cache, no rtr port
  My Query address: 1.1.1.1 (configured)
  Edge ports: e3/1/31, e3/1/34,
  Non-Edge ports: lg13,
  e3/1/31   has    0 grp, QR, default V2
  e3/1/34   has    0 grp, QR, default V2
  lg13      has    0 grp, QR, default V2 trunk
```

The following example shows IGMP snooping information for a VLAN, including information about passive neighbors.

```
device> ip multicast vlan 11

Version=2, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL11: dft V2, sdvoe-auto-edge-port-track-active, 0 grp, 7 (*G) cache, no rtr port
    passive neighbors: lg23(260) 4.4.4.4,
  My Query address: 2.2.2.2 (configured)
  Static Mcache profile id: Default profile
  e3/1/41   has    0 grp, QR, default V2
  e3/1/42   has    0 grp, QR, default V2
  lg23      has    0 grp, QR, default V2 trunk
  lg24      has    0 grp, QR, default V2 trunk
```

The following example shows IGMP snooping information for VLAN 11, including SDVoE configurations. In the example, the non-edge port is the only router port, and all other ports are edge ports..

```
device> show ip multicast vlan 11

Version=2, Intervals: Query=200, Group Age=1020, Max Resp=20, Other Qr=1010,
             Leave Wait=3, Robustness=5

VL11: dft V2, sdvoe-auto-edge-port-track-passive, 1 grp, 8 (*G) cache, (dy-1, st-0) rtr ports
        router ports: lg1(900) 3.3.3.3,
          My Query address: None
          Static Mcache profile id: Default profile
          e1/2/6    has    1 grp, non-QR (passive), default V2
            group: 225.1.1.1, life = 980
           e3/2/7    has    0 grp, non-QR (passive), default V2
            group: 225.1.1.1, life = 960
           lg1       has    1 grp, non-QR (QR=3.3.3.3, age=120, mrt=20), default V2 trunk
            group: 225.1.1.2, life = 1020
            group: 225.1.1.1, life = 1020
```

The following example shows IGMP snooping information for VLAN 11, including SDVoE configurations. In the example, all non-edge ports are detected automatically and listed (lg1 and lg2).

```
device> show ip multicast vlan 11
    Version=2, Intervals: Query=200, Group Age=1020, Max Resp=20, Other Qr=1010,
               Leave Wait=3, Robustness=5

    VL11: dft V2, sdvoe-auto-edge-port-track-active, 1 grp, 8 (*G) cache, no rtr port
            passive neighbors: lg1(920), lg2(960)
        My Query address: 3.3.3.3 (configured)
        Static Mcache profile id: Default profile
        lg1       has    0 grp, QR, default V2 trunk
        group: 225.1.1.1, life = 1000
        lg2       has    1 grp, QR, default V2 trunk
        group: 225.1.1.2, life = 1000
            group: 225.1.1.1, life = 1020
```

The following example shows IGMP snooping information for all VLANs, including information for stacking units where the traffic flow is active.

```
device> show ip multicast vlan

Version=2, Intervals: Query=125, Group Age=500, Max Resp=10, Other Qr=255,
Leave Wait=2, Robustness=2
Replication resource sharing: Enabled
Unregistered IPv4 Multicast Packets Flooding: Disabled
Multicast Aging Unit Mask: 0x3
VL1 no snoop : no local config
VL20: dft V1, glb cfg passive, 0 grp, 0 (*G) cache, no rtr port
VL100 no snoop: PIM on its VE/port
```

History

Release version	Command history
08.0.20	This command was modified to display MCT cluster information.
08.0.30	This command was modified to display flooding information.
08.0.50	The output of this command was modified to include the My Query address field.
09.0.00	The output of this command was modified to include SDVoE information, information for edge ports and non-edge ports, passive neighbors, and the configured static mache profile.
09.0.10	The output of this command was modified to include MVR information.
10.0.00	The output of this command was modified to include information for stacking units where the traffic flow is active.

show ip mvr interface

Displays Multicast VLAN Registration (MVR) interface information.

Syntax

show ip mvr interface

Modes

User EXEC mode

Examples

The following example shows MVR interface information.

```
device> show ip mvr interface

Flags    : MV-R - MVR Receiver, MV-S - MVR Source

---------+---------------+----+---+
Interface|Local          |Mode|St |
         |Address        |    |   |
---------+---------------+----+---+
      v1 *               MV-S Ena
      v2 *               MV-S Ena
     v10 *               MV-R Ena
     v11 *               MV-R Ena
Total Number of Interfaces : 4
```

History

Release version	Command history
09.0.10a	This command was introduced.

show ip mvr mcache

Displays informataion about the Multicast VLAN Registration (MVR) forwarding database.

Syntax

show ip mvr mcache

Modes

User EXEC mode

Examples

The following example shows information about the MVR forwarding database.

```
device> show ip mvr mcache

IP Multicast MVR Mcache Table
Entry Flags    : MVR  - Multicast VLAN Registration Mode
                 LSRC - Local Source, LRCV - Local Receiver
                 HW - HW Forwarding Enabled, FAST - Resource Allocated, TAG - Need For Replication Entry
Interface Flags: MJ - Membership Join, MI - Membership Include, ME - Membership Exclude
                 MS - MVR Srouce Port

Total entries in mcache: 1

1     (53.0.0.10, 225.0.0.1) in v1 (tag e1/1/1), Uptime 14:08:27 (MVR) <-------- shows v1 is source vlan
      Source is MVR MVlan
      Flags (0x600400e1) MVR LRCV HW FAST TAG
      fast ports: ethe 1/1/1 eth 1/1/2 eth 1/1/3 eth 1/1/4
      AgeSltMsk: 1, IPMC:   293
      Forwarding_oif: 4
      L3 (HW) 2:
          e1/1/3(VL10), 14:08:27/0, Flags: MJ         <--- Member joined on receiver VLANS
          e1/1/4(VL11), 14:08:27/0, Flags: MJ
      L2 (HW) 2:
          e1/1/1,  14:08:27/0, Flags: MS              <------- Note: source vlan ports are added by
default
          e1/1/2,  14:08:18/0, Flags: MS
      Src-Vlan:   1
Number of matching entries: 1
```

History

Release version	Command history
09.0.10a	This command was introduced.

show ip mvr setting

Displays Multicast VLAN Registration (MVR) global settings.

Syntax

show ip mvr setting

Modes

User EXEC mode

Examples

The following example shows MVR global settings.

```
device> show ip mvr settings

Global MVR Mode Settings
  MVR: Global               : Yes             Mode                 : Transparent
  Mcache: Total In-Use      : 1               Curr Max limit(HW)   : 1024
  Mcache: Current Count     : 1               Inactivity interval  : 180
```

History

Release version	Command history
09.0.10a	This command was introduced.

show ip os-interface

Displays information of all current operating system packet interface filters.

Syntax

show ip os-interface [**filter-info** | **port-info** | **port-info statistics** | **debug-info** | **logs**]

Parameters

filter-info
Displays the filter information.

port-info
Displays the port information.

port-info statistics
Displays the port information statistics.

debug-info
Displays the debug information.

logs
Displays the log information.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The command displays the following information:

Output field	Description
IPv4 Mask	Shows the mask that is applied to the ingress packet's IP address to determine if it matches the filter.
IPv6 Mask	Shows the mask that is applied to the ingress packet's IP address to determine if it matches the filter.
IPv4 Val	Shows the expected value expected after the filter is applied for the ingress IP address to match the filter.
IPv6 Val	Shows the expected value expected after the filter is applied for the ingress IP address to match the filter.
IP Protocol	Shows the expected value of the IP Protocol Number field in the ingress IP header to match the filter.
Port	Shows the expected value of the TCP/UDP Port number in the ingress IP header to match the filter.
Match-Count	Shows the number of packets which have matched this filter.
Interface	Shows the L3 interface for which the information is displayed.
VRF	Shows the VRF configuration for the corresponding L3 interface.

Output field	Description
OS intf	Shows the name of the corresponding interface representation in the OS.
Status	Shows the status of the corresponding OS interface.
MTU	Shows the MTU setting for the corresponding OS interface.
MAC address	Shows the L2 MAC address for the corresponding OS interface.
IPv4/IPv6 Address	Shows the list of assigned IPv4/IPv6 addresses for the corresponding OS interface.
Port	Shows the L3 interface for which the information is displayed.
OS Intf	Shows the name of the corresponding interface representation in the OS.
In Packets	Shows the number of packets received on this OS interface.
In Bytes	Shows the number of bytes received on this OS interface.
Out Packets	Shows the number of packets transmitted on this OS interface.
Out Bytes	Shows the number of bytes transmitted on this OS interface.

Examples

The following example shows sample output from the **show ip os-interface filter-info** command.

```
device# show ip os-interface filter-info
IPv4 Mask       IPv4 Val    IP Protocol      Port     Match-Count
0.0.0.0         0.0.0.0           6          8686         0
0.0.0.0         0.0.0.0          17          8686         0
0.0.0.0         0.0.0.0           6          8000         0
IPv6 Mask       IPv6 Val    IP Protocol      Port     Match-Count
     ::              ::          17          8686         0
     ::              ::           6          8686         0
```

The following example shows output from the **show ip os-interface port-info** command.

```
device# show ip os-interface port-info
Interface           VRF           OS intf  Status   MTU   MAC Address     IPv4/IPv6
Address
ve 1023             default-vrf   tap14337   Up    1500  748e.f8f9.6c80   80.1.123.1/24
                                                                          80::1/64
ve 101              default-vrf   tap14338   Up    1500  748e.f8f9.6c80   101.1.1.1/24
ethernet mgmt1      default-vrf   tap49     Down   1500  748e.f8f9.6c80   10.177.120.31/24
loopback 1          default-vrf   tap14592   Up    1500  748e.f8f9.6c80   112.1.1.1/24
```

The following example shows sample output from the **show ip os-interface port-info statistics** command.

```
device# show ip os-interface port-info statistics
Port                OS Intf          In Packets          In Bytes    Out Packets    Out Bytes
ve 1023             tap14337              1                 64           2              128
ve 101              tap14338              0                  0           0                0
ethernet mgmt1      tap49                 0                  0           0                0
loopback 1          tap14592              0                  0           0                0
```

The following example shows sample output from the **show ip os-interface debug-info** command.

```
device#show ip os-interface debug-info
lo          Status: Up    MAC: 0000.0000.0000    MTU: 65536
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

tap14592    Status: Up    MAC: 609c.9f51.d014    MTU: 1500
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

tap49       Status: Up    MAC: 609c.9f51.d014    MTU: 1500
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

tap14337    Status: Up    MAC: 609c.9f51.d014    MTU: 1300
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

tap14338    Status: Up    MAC: 609c.9f51.d014    MTU: 1500
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

tap14688    Status: Up    MAC: 609c.9f51.d014    MTU: 1476
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

tap14689    Status: Up    MAC: 609c.9f51.d014    MTU: 1500
        tx_packets =          0; rx_packets =          0
        tx_bytes   =          0; rx_bytes   =          0

lo          <127.0.0.1>
tap49       <10.177.120.39>
tap14337    <10.1.1.1>
tap14337    <100.1.1.2>
tap14338    <11.1.1.1>
tap14688    <80.1.1.1>
lo          <::1>
tap14592    <64::1>
tap14592    <fe80::629c:9fff:fe51:d014%tap14592>
tap49       <2::2>
tap49       <fe80::629c:9fff:fe51:d014%tap49>
tap14337    <10::1>
tap14337    <100::1>
tap14337    <fe80::629c:9fff:fe51:d014%tap14337>
tap14338    <11::1>
tap14338    <fe80::629c:9fff:fe51:d014%tap14338>
tap14688    <fe80::629c:9fff:fe51:d014%tap14688>
tap14689    <110::1>
tap14689        <fe80::629c:9fff:fe51:d014%tap14689>
```

The following example shows sample output from the **show ip os-interface logs** command.

```
device#show ip os-interface logs
Start i/max/iter 0/272/1
Feb 14 00:46:44:Info : creating tunnel task
Feb 14 00:46:57:The soft limit is 1024 400
Feb 14 00:46:57:The hard limit is 1024 400
Feb 14 00:46:57:The soft limit is 1500 5dc
Feb 14 00:46:57:The hard limit is 1500 5dc
Feb 14 00:46:57:os_pkt_intx_tx created successfully
Feb 14 00:46:58:/usr/bin/ip netns add fi
Feb 14 00:46:58:set_task_namespace> ns_name = fi ns_dir_path = /var/run/netns/fi
Feb 14 00:46:58:/usr/bin/ip netns exec fi /usr/bin/ip link set dev lo up
Feb 14 00:46:58:fd_set_blocking> fd: 39 flags: 2 2048
Feb 14 00:46:59:os_pkt_intf_assign_ip6_address> vrf_index: 0 port_number: 14591 ip_address: 64::1
prefix_len: 64
Feb 14 00:46:59:os_pkt_intf_task_intf_ipv6_addr_add_callback called vrf 0 port loopback 1 ip_address:
64::1 prefix len: 64 mtu: 1500
Feb 14 00:46:59:Unable to get vrf 0 port 14591 from hash
Feb 14 00:46:59:Assigned IP 64::1 mask: 64 to port loopback 1
Feb 14 00:46:59:os_pkt_intf_assign_ip6_address> vrf_index: 0 port_number: 48 ip_address: 2::2
prefix_len: 64
```

History

Release version	Command history
08.0.90	This command was introduced.

show ip ospf

Displays OSPF information.

Syntax

show ip ospf

Modes

User EXEC mode

Examples

The following example displays sample output from the **show ip ospf** command.

```
device> show ip ospf

OSPF Version                 Version 2
Router Id                    10.11.12.13
ASBR Status                  Yes
ABR Status                   No         (0)
Redistribute Ext Routes from Default-Info
Initial SPF schedule delay   100        (msecs)
Minimum hold time for SPFs   100        (msecs)
Maximum hold time for SPFs   100        (msecs)
External LSA Counter         1
External LSA Checksum Sum    00006777
Originate New LSA Counter    5033
Rx New LSA Counter           1
External LSA Limit           22
Database Overflow Interval   0
Database Overflow State :    NOT OVERFLOWED
RFC 1583 Compatibility :     Enabled
NSSA Translator:             Enabled
Nonstop Routing:             Disabled
Graceful Restart:            Enabled,   timer 120
Graceful Restart Helper:     Enabled
```

show ip ospf area

Displays the OSPF area table in a specified format.

Syntax

show ip ospf area { *A.B.C.D* | *decimal* } **database link-state** [**advertise** *index* | **asbr** { *asbr-id* | **adv-router** *router-id* } | **extensive** | **link-state-id** *id* | **network** { *net-id* | **adv-router** *router-id* } | **nssa** { *nssa-id* | **adv-router** *router-id* } | **router** { *router-id* | **adv-router** *router-id* } | **self-originate** | **sequence-number** *num* | **summary** { *id* | **adv-router** *router-id* }]

Parameters

A.B.C.D
Area address in dotted decimal format.

decimal
Area address in decimal format. Valid values range from 0 to 2147483647.

database link-state
Displays database link-state information.

advertise *index*
Displays the link state by Link State Advertisement (LSA) index.

asbr
Displays the link state for all autonomous system boundary router (ASBR) links.

asbr-id
Displays the state of a single ASBR link that you specify.

adv-router *router-id*
Displays the link state for the advertising router that you specify.

extensive
Displays detailed information for all entries in the OSPF database.

link-state-id *id*
Displays the link state by link-state ID.

network
Displays the link state by network link.

net-id
Displays the link state of a particular network link that you specify.

nssa
Displays the link state by not-so-stubby area (NSSA).

nssa-id
Displays the link state of a particular NSAA area that you specify.

router
Displays the link state by router link.

router-id
Displays the link state of a particular router link that you specify.

self-originate

Displays self-originated link states.

sequence-number *num*

Displays the link-state by sequence number that you specify.

summary

Displays the link state summary. Can specify link-state ID or advertising router ID.

id

Displays the link state for the advertising router that you specify.

Modes

User EXEC mode

Command Output

The **show ip ospf area** command displays the following information:

Output field	Description
Index	The row number of the entry in the router's OSPF area table.
Area	The area number.
Type	The area type, which can be one of the following: • nssa • normal • stub
Cost	The area's cost.
SPFR	The SPFR value.
ABR	The ABR number.
ASBR	The ABSR number.
LSA	The LSA number.
Chksum(Hex)	The checksum for the LSA packet. The checksum is based on all the fields in the packet except the age field. The device uses the checksum to verify that the packet is not corrupted.

Examples

The following example shows output for the **show ip ospf area** command.

```
device> show ip ospf area

Indx  Area        Type    Cost  SPFR  ABR  ASBR  LSA  Chksum(Hex)
1    0.0.0.0      normal  0     1     0    0     1    0000781f
2   10.147.60.0   normal  0     1     0    0     1    0000fee6
3   10.147.80.0   stub    1     1     0    0     2    000181cd
```

show ip ospf border-routers

Displays information about border routers and boundary routers.

Syntax

show ip ospf border-routers [*A.B.C.D*]

Parameters

A.B.C.D

Specifies the router ID in dotted decimal format.

Modes

User EXEC mode

Usage Guidelines

Use this command to display information about area border routers (ABRs) and autonomous system boundary routers (ASBRs). You can display information for all ABRs and ASBRs or for a specific router.

Command Output

The **show ip ospf border-routers** command displays the following information:

Output field	Description
(Index)	Displayed index number of the border router.
Router ID	ID of the OSPF router
Router type	Type of OSPF router: ABR or ASBR
Next hop router	ID of the next hop router
Outgoing interface	ID of the interface on the router for the outgoing route.
Area	ID of the OSPF area to which the OSPF router belongs

Examples

The following is sample output for the **show ip ospf border-routers** command when no router ID is specified.

```
device> show ip ospf border-routers
      router ID       router type next hop router  outgoing interface  Area
1     10.65.12.1      ABR         10.1.49.2        v49                 0
1     10.65.12.1      ASBR        10.1.49.2        v49                 0
1     10.65.12.1      ABR         10.65.2.251      v201                65
1     10.65.12.1      ASBR        10.65.2.251      v201                65
```

The following is sample output for the **show ip ospf border-routers** command when a router ID is specified.

```
device> show ip ospf border-routers 192.168.98.111
router ID       router type next hop router outgoing interface  Area
192.168.98.111  ABR         193.213.111.111 4/3/1*8/3/1           0
```

show ip ospf config

Displays general OSPF configuration information.

Syntax

show ip ospf config

Modes

User EXEC mode

Command Output

The **show ip ospf config** command displays the following information:

Output field	Description
Router OSPF	Shows whether or not the router OSPF is enabled.
Nonstop Routing	Shows whether or not the non-stop routing is enabled.
Graceful Restart	Shows whether or not the graceful restart is enabled.
Graceful Restart Helper	Shows whether or not the OSPF graceful restart helper mode is enabled.
Graceful Restart Time	Shows the maximum restart wait time advertised to neighbors.
Graceful Restart Notify Time	Shows the graceful restart notification time.
Redistribution	Shows whether or not the redistribution is enabled.
Default OSPF Metric	Shows the default OSPF metric value.
OSPF Auto-cost Reference Bandwidth	Shows whether or not the auto-cost reference bandwidth option is enabled.
Default Passive Interface	Shows whether or not the default passive interface state is enabled.
OSPF Redistribution Metric	Shows the OSPF redistribution metric type, which can be one of the following: • Type1 • Type2
OSPF External LSA Limit	Shows the external LSA limit value.
OSPF Database Overflow Interval	Shows the database overflow interval value.
RFC 1583 Compatibility	Shows whether or not the RFC 1583 compatibility is enabled.
Router id	Shows the ID of the OSPF router.

Output field	Description
OSPF traps	Shows whether or not the following OSPF traps generation is enabled. • Interface State Change Trap • Virtual Interface State Change Trap • Neighbor State Change Trap • Virtual Neighbor State Change Trap • Interface Configuration Error Trap • Virtual Interface Configuration Error Trap • Interface Authentication Failure Trap • Virtual Interface Authentication Failure Trap • Interface Receive Bad Packet Trap • Virtual Interface Receive Bad Packet Trap • Interface Retransmit Packet Trap • Virtual Interface Retransmit Packet Trap • Originate LSA Trap • Originate MaxAge LSA Trap • Link State Database Overflow Trap • Link State Database Approaching Overflow Trap
Area-ID	Shows the area ID of the interface.
Area-Type	Shows the area type, which can be one of the following: • nssa • normal • stub
Cost	Shows the cost of the area.
Ethernet Interface	Shows the OSPF interface.
ip ospf md5-authentication-key-activation-wait-time	Shows the wait time of the device until placing a new MD5 key into effect.
ip ospf area	Shows the area of the interface.
ip ospf cost	Shows the overhead required to send a packet across an interface.

Examples

The following example displays general OSPF configuration information.

```
device> show ip ospf config
Router OSPF: Enabled
Nonstop Routing: Disabled
Graceful Restart: Disabled
Graceful Restart Helper: Enabled
Graceful Restart Time: 120
Graceful Restart Notify Time: 0
Redistribution: Disabled
Default OSPF Metric: 50
OSPF Auto-cost Reference Bandwidth: Disabled
Default Passive Interface: Enabled
OSPF Redistribution Metric: Type2
OSPF External LSA Limit: 1447047
OSPF Database Overflow Interval: 0
RFC 1583 Compatibility: Enabled
Router id: 10.95.11.128
Interface State Change Trap:                        Enabled
Virtual Interface State Change Trap:                Enabled
Neighbor State Change Trap:                         Enabled
Virtual Neighbor State Change Trap:                 Enabled
Interface Configuration Error Trap:                 Enabled
Virtual Interface Configuration Error Trap:         Enabled
Interface Authentication Failure Trap:              Enabled
Virtual Interface Authentication Failure Trap:      Enabled
Interface Receive Bad Packet Trap:                  Enabled
Virtual Interface Receive Bad Packet Trap:          Enabled
Interface Retransmit Packet Trap:                   Disabled
Virtual Interface Retransmit Packet Trap:           Disabled
Originate LSA Trap:                                 Disabled
Originate MaxAge LSA Trap:                          Disabled
Link State Database Overflow Trap:                  Disabled
Link State Database Approaching Overflow Trap:      Disabled
OSPF Area currently defined:
Area-ID          Area-Type Cost
0                normal    0
OSPF Interfaces currently defined:
Ethernet Interface: 1/3/1-1/3/2
ip ospf md5-authentication-key-activation-wait-time 300
ip ospf cost 0
ip ospf area 0
Ethernet Interface: v1
ip ospf md5-authentication-key-activation-wait-time 300
ip ospf cost 0
ip ospf area 0
```

show ip ospf database

Shows OSPFv2 database information.

Syntax

show ip ospf database

show ip ospf database database-summary

show ip ospf database external-link-state [**advertise** *index* | **extensive** | **link-state-id** *id* | **router-id** *router-id* | **sequence-number** *num*]

show ip ospf database grace-link-state

show ip ospf database link-state [**advertise** *index* | **asbr** [*asbr-id* | **adv-router** *router-id*] | **extensive** | **link-state-id** *id* | **network** { *net-id* | **adv-router** *router-id* } | **nssa** { *nssa-id* | **adv-router** *router-id* } | **router** { *router-id* | **adv-router** *router-id* } | **router-id** *router-id* | **self-originate** | **sequence-number** *num* | **summary** { *id* | **adv-router** *router-id* }]

Parameters

database-summary

Displays how many link state advertisements (LSAs) of each type exist for each area, as well as total number of LSAs.

external-link-state

Displays information by external link state, based on the following parameters:

advertise *index*

Displays the hexadecimal data in the specified LSA packet. The *index* parameter identifies the LSA packet by its position in the router's External LSA table. To determine an LSA packet's position in the table, enter the **show ip ospf external-link-state** command.

extensive

Displays LSAs in decrypt format. Do not use this parameter in combination with other display parameters because the entire database is displayed.

link-state-id *id*

Displays external LSAs for the LSA source that you specify.

router-id *router-id*

Displays external LSAs for the advertising router that you specify.

sequence-number *num*

Displays the External LSA entries for the hexadecimal LSA sequence number that you specify.

link-state

Displays the link state, based on the following parameters:

adv-router *router-id*

Displays the link state for the advertising router that you specify.

advertise *index*

Displays the hexadecimal data in the specified LSA packet. The *index* parameter identifies the LSA packet by its position in the router's external-LSA table. To determine an LSA packet's position in the table, enter the **show ip ospf external-link-state** command.

asbr
Displays autonomous system boundary router (ASBR) LSAs.

extensive
Displays LSAs in decrypt format. Do not use this parameter in combination with other display parameters because the entire database is displayed.

link-state-id *id*
Displays LSAs for the LSA source that you specify.

network
Displays either all network LSAs or the LSAs for a network that you specify.

nssa
Displays either all NSSA LSAs or the LSAs for a not-so-stubby area (NSSA) that you specify.

router
Displays LSAs by router link.

router-id *router-id*
Displays LSAs for the advertising router that you specify.

self-originate
Displays self-originated LSAs.

sequence-number
Displays the LSA entries for the hexadecimal LSA sequence number that you specify.

summary
Displays summary information. You can specify link-state ID or advertising router ID.

adv-router *router-id*
Displays the link state for the advertising router that you specify.

Modes

User EXEC mode

Command Output

The **show ip ospf database** command displays the following information:

Output field	Description
Index	ID of the entry
Area ID	ID of the OSPF area
Type	Link state type of the route.
LS ID	The ID of the link-state advertisement from which the router learned this route.
Adv Rtr	ID of the advertised route.
Seq(Hex)	The sequence number of the LSA. The OSPF neighbor that sent the LSA stamps the LSA with a sequence number. This number enables the device and other OSPF routers to determine which LSA for a given route is the most recent.
Age	The age of the LSA in seconds.

Output field	Description
Chksum	The checksum for the LSA packet. The checksum is based on all the fields in the packet except the age field. The device uses the checksum to verify that the packet is not corrupted.
SyncState	This field indicates whether the synchronization is complete or not.

Examples

The following example shows output for the **show ip ospf database** command.

```
device> show ip ospf database

Index Area ID             Type LS ID                        Adv Rtr                      Seq(Hex)
Age  Cksum  SyncState
1     0.0.0.200   Rtr  192.168.98.111  192.168.98.111  8000003b 626  0xf885 Done
2     0.0.0.200   Rtr  192.168.98.213  192.168.98.213  800000c9 963  0x209c Done
3     0.0.0.200   Rtr  192.168.98.113  192.168.98.113  80000028 169  0x0275 Done
4     0.0.0.200   Rtr  192.168.98.112  192.168.98.112  8000002d 226  0x1c03 Done
5     0.0.0.200   Net  193.113.111.113 192.168.98.113  8000001f 1132 0x353d Done
6     0.0.0.200   Net  192.213.111.213 192.168.98.213  8000002d 1683 0x17bc Done
```

The following example shows output for the **show ip ospf database** command when the **link-state** parameter is used.

```
device> show ip ospf database link-state

Index Area ID Type LS ID       Adv Rtr     Seq(Hex) Age  Cksum           SyncState
1     0       Rtr  10.1.10.1   10.1.10.1   800060ef 3    0x4be2          Done
2     0       Rtr  10.65.12.1  10.65.12.1  80005264 6    0xc870          Done
3     0       Net  10.1.64.2   10.65.12.1  8000008c 1088 0x06b7          Done
4     0       Net  10.1.167.2  10.65.12.1  80000093 1809 0x86c8          Done
5     0       Net  10.1.14.2   10.65.12.1  8000008c 1088 0x2ec1             Done
6     0       Net  10.1.117.2  10.65.12.1  8000008c 1087 0xbccb             Done
7     0       Net  10.1.67.2   10.65.12.1  8000008c 1088 0xe4d5          Done
8     0       Net  10.1.170.2  10.65.12.1  80000073 604  0xa5c6          Done
9     0       Net  10.1.17.2   10.65.12.1  8000008c 1088 0x0ddf          Done
10    0       Net  10.1.120.2  10.65.12.1  8000008c 1087 0x9be9          Done
11    0       Net  10.1.70.2   10.65.12.1  8000008c 1088 0xc3f3          Done
12    0       Net  10.1.173.2  10.65.12.1  80000017 1087 0x3d88          Done
13    0       Net  10.1.20.2   10.65.12.1  8000008c 1088 0xebfd          Done
14    0       Net  10.1.123.2  10.65.12.1  8000008c 1087 0x7a08          Done
15    0       Net  10.1.73.2   10.65.12.1  8000008c 1088 0xa212          Done
16    0       Net  10.1.176.2  10.65.12.1  80000025 1087 0xffb4          Done
17    0       Net  10.1.23.2   10.65.12.1  8000008c 1088 0xca1c          Done
18    0       Net  10.1.126.2  10.65.12.1  8000008c 1087 0x5926             Done
```

The following example shows output for the **show ip ospf database** command when the **external-link-state** parameter is used.

```
device> show ip ospf database external-link-state

Index Age LS ID                        Router       Netmask     Metric      Flag        Fwd Address
SyncState
1     591 10.65.13.0 10.65.12.1 ffffff00 8000000a 0000        0.0.0.0             Done
2     591 10.65.16.0 10.65.12.1 ffffff00 8000000a 0000     0.0.0.0                Done
3     591 10.65.14.0 10.65.12.1 ffffff00 8000000a 0000     0.0.0.0                Done
4     591 10.65.17.0 10.65.12.1    ffffff00 8000000a 0000     0.0.0.0                Done
5     592 10.65.12.0 10.65.12.1 ffffff00 8000000a 0000     0.0.0.0                Done
6     592 10.65.15.0 10.65.12.1 ffffff00 8000000a 0000     0.0.0.0                Done
7     592 10.65.18.0 10.65.12.1 ffffff00 8000000a 0000     0.0.0.0              Done
```

The following example shows output for the **show ip ospf database** command when the **database-summary** parameter is used.

```
device> show ip ospf database database-summary

Area ID    Router Network Sum-Net Sum-ASBR NSSA-Ext Opq-Area Subtotal
0.0.0.0    104    184     19      42       0        0        349
AS External                                                  308
Total      104    184     19      42       0        0        657
```

show ip ospf interface

Displays information about all or specific Open Shortest Path First (OSPF)-enabled interfaces.

Syntax

show ip ospf interface[*ip-address*][**brief**][**ethernet***unit/slot/port*][**lag***lag-id*][**loopback***number*][**tunnel***number*][**ve***vlan-id*]

Parameters

ip-address
: Specifies interface IP address in dotted decimal format.

brief
: Displays brief summary information about the specified interface.

ethernet*unit/slot/port*
: Specifies an Ethernet interface with the interface ID in unit/slot/port ID format.

lag*lag-id*
: Specifies the Link Aggregation Group (LAG) virtual interface.

loopback*number*
: Specifies a loopback port number, which ranges from 1 through 255..

tunnel*number*
: Specifies a tunnel interface.

ve*vlan-id*
: Specifies the virtual Ethernet (VE) VLAN number.

Modes

User EXEC mode

Usage Guidelines

Use the **brief** keyword to limit the display to the following fields:

- Interface
- Area
- IP address/Mask
- Cost
- State
- Nbrs (F/C)

Command Output

The **show ip ospf interface** command displays the following information:

Output field	Description
Interface	The type of interface type and the port number or number of the interface.
IP Address	The IP address of the interface.
Area	The OSPF area configured on the interface
Database Filter	The router's configuration for blocking outbound LSAs on an OSPF interface. If Not Configured is displayed, there is no outbound LSA filter configured. This is the default condition.
State	The state of the interface. Possible states include the following: • DR: The interface is functioning as the Designated Router for OSPFv2. • BDR: The interface is functioning as the Backup Designated Router for OSPFv2. • Loopback: The interface is functioning as a loopback interface. • P2P: The interface is functioning as a point-to-point interface. • Passive: The interface is up but does not take part in forming an adjacency. • Waiting: The interface is trying to determine the identity of the BDR for the network. • None: The interface does not take part in the OSPF interface state machine. • Down: The interface is unusable. No protocol traffic can be sent or received on such a interface. • DR other: The interface is a broadcast or NBMA network on which another router is selected to be the DR. • Active: The interface sends or receives all the OSPFv2 control packets and forms the adjacency.
default	Shows whether or not the default passive state is set.
Pri	The interface priority.
Cost	The configured output cost for the interface.
Interface bandwidth	The configured bandwidth on a tunnel interface for routing metric purposes only.
Options	OSPF Options (Bit7 - Bit0): • unused:1 • opaque:1 • summary:1 • dont_propagate:1 • nssa:1 • multicast:1 • external route capable:1 • tos:1
Type	The area type: • Broadcast • Point to Point • Non-broadcast • Virtual Link

Output field	Description
Events	OSPF interface event: • Interface_Up = 0x00 • Wait_Timer = 0x01 • Backup_Seen = 0x02 • Neighbor_Change = 0x03 • Loop_Indication = 0x04 • Unloop_Indication = 0x05 • Interface_Down = 0x06 • Interface_Passive = 0x07
Timer intervals	The interval, in seconds, of the transmit-interval, retransmit-interval, hello-interval, and dead-interval timers.
Packets Received	Number of packets received from the server.
Packets Sent	Number of packets sent to the server.
Hello	Number of Hello packets.
Database	OSPF database.
LSA Req	
LSA Upd	LSA update
LSA Ack	LSA acknowledgment.
Packet Errors	OSPF packet areas
Area mismatch	
DR	The router ID (IPv4 address) of the Designated Router (DR).
BDR	The router ID (IPv4 address) of the Backup Designated Router (BDR).
Neighbor Count	The number of neighbors to which the interface is connected.
Adjacent Neighbor Count	The number of adjacent neighbor routers.
Neighbor	The IP address of the neighbor.

Examples

This example shows sample output from the **show ip ospf interface** command when the **brief** keyword is used.

```
device# # show ip ospf interface brief
Number of Interfaces is 1
Interface Area IP Addr/Mask Cost State Nbrs(F/C)
eth 1/1/2    0    16.1.1.2/24   1     down  0/0
```

The following example displays information about a specified OSPF-enabled virtual Ethernet (VE) interface.

```
device# show ip ospf interface ve 20

ve 20  admin up, oper up, ospf enabled, state up
     IP Address 21.21.21.22, Area 0
     Database Filter: Not Configured
     State BDR, Pri 1, Cost 1, Options 2, Type broadcast Events 31
     Timers(sec): Transmit 1, Retrans 5, Hello 10, Dead 40
     DR:  Router ID 3.3.3.3           Interface Address 21.21.21.21
     BDR: Router ID 2.2.2.2           Interface Address 21.21.21.22
                    Packets Received        Packets Sent
     Hello                      86374               86735
     Database                       2                   4
     LSA Req                        1                   0
     LSA Upd                      451                 907
     LSA Ack                      906                 451
     No Packet Errors!
     Neighbor Count = 1, Adjacent Neighbor Count= 1
     Neighbor:         21.21.21.21 [id 3.3.3.3] (DR)
     Authentication-Key: None
     MD5 Authentication: Key None, Key-Id None, Auth-change-wait-time 300
```

The following example displays information about a specified OSPF-enabled Ethernet interface, including the cost, where the cost is calculated using the default interface speed and auto cost.

```
device# show ip ospf interface ethernet 3/1/1

     e 3/1/1 admin up, oper up, ospf enabled, state up
     IP Address 89.0.0.2, Area 0
     Database Filter: Not Configured
     State BDR, Pri 1, Cost 1, Options 2, Type broadcast Events 3
```

The following example displays information about a specified OSPF-enabled Ethernet interface, including the cost, which has been calculated using the configured interface bandwidth and the default auto-cost.

```
device# show ip ospf interface ethernet 1/1/3

e 1/1/3 admin up, oper up, ospf enabled, state up
     IP Address 172.201.3.2, Area 0
     Database Filter: Not Configured
     State DR, Pri 1, Cost 34, Options 2, Type broadcast Events 5
     Timers(sec): Transmit 1, Retrans 5, Hello 10, Dead 40
     DR:  Router ID 192.168.3.1       Interface Address 172.201.3.2
     BDR: Router ID 192.168.1.1       Interface Address 172.201.3.1
                    Packets Received        Packets Sent
     Hello                        73                  79
     Database                      3                   2
     LSA Req                       0                   1
     LSA Upd                       4                   5
     LSA Ack                       5                   3
     No Packet Errors!
     Neighbor Count = 1, Adjacent Neighbor Count= 1
     Neighbor:         172.201.3.1 [id 192.168.1.1] (BDR)
     Authentication-Key: None
     MD5 Authentication: Key None, Key-Id None, Auth-change-wait-time 300
```

The following example displays information about a specified OSPF-enabled VE interface including OSPF BFD sessions for neighbors.

```
device# show ip ospf interface ve 10

ve 10 admin up, oper up, ospf enabled, state up
     IP Address 12.12.12.3, Area 0
BFD is enabled
     Database Filter: Not Configured
     State DR, Pri 1, Cost 1, Options ------E-, Type broadcast Events 55183
     Timers(sec): Transmit 1, Retrans 5, Hello 10, Dead 40
     DR:  Router ID 0.0.0.2           Interface Address 12.12.12.3
     BDR: Router ID 0.0.0.1           Interface Address 12.12.12.6
                     Packets Received        Packets Sent
     Hello                      10029               10045
     Database                       3                   3
     LSA Req                        1                   1
     LSA Upd                       56                  60
     LSA Ack                       59                  55
     Packet Errors: None
     Neighbor Count = 1, Adjacent Neighbor Count= 1
     Neighbor:         12.12.12.6 [id 0.0.0.1] (BDR)
     Authentication-Key: None
     MD5 Authentication: Key None, Key-Id None, Auth-change-wait-time 300
```

The following example displays information about a specified OSPF-enabled VE interface including information for port traffic statistics.

```
device> show ip ospf interface ve 42

ve 42  admin up, oper up, ospf enabled, state up
     IP Address 42.1.1.1, Area 1.1.1.1
     Database Filter: Not Configured
     State BDR, Pri 1, Cost 1, Options 2, Type broadcast Events 2
     Timers(sec): Transmit 1, Retrans 5, Hello 10, Dead 40
     DR:  Router ID 135.1.1.1         Interface Address 42.1.1.35
     BDR: Router ID 102.1.1.1         Interface Address 42.1.1.1
                     Packets Received        Packets Sent
     Hello                         11                  11
     Database                       0                   0
     LSA Req                        0                   0
     LSA Upd                        0                   0
     LSA Ack                        0                   0
     Packet Errors:
      Area mismatch 22,
     Neighbor Count = 1, Adjacent Neighbor Count= 1
     Neighbor:         42.1.1.35 [id 135.1.1.1] (DR)
     In-Use Authentication:         None, Key:     None, Key-Id: None
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.
08.0.92	The packet error section of the output for this command was modified to include more error counters for port traffic statistics.
08.0.92a	The output for this command was modified so that the MD5 password is not displayed in clear text when **enable password-display** is configured.

show ip ospf neighbor

Displays OSPF neighbor information.

Syntax

show ip ospf neighbor [**extensive** | *num* | **router-id** *A.B.C.D*]

Parameters

extensive

Displays detailed neighbor information.

num

Specifies displays only the entry in the specified index position in the neighbor table. For example, if you enter "1", only the first entry in the table is displayed.

router-id *A.B.C.D*

Displays neighbor information for the specified router ID.

Modes

User EXEC mode

Command Output

The **show ip ospf neighbor** command displays the following information:

Output field	Description
Port	The port through which the device is connected to the neighbor.
Address	The IP address of the port on which this device is connected to the neighbor.
Pri	The OSPF priority of the neighbor. • For multi-access networks, the priority is used during election of the Designated Router (DR) and Backup designated Router (BDR). • For point-to-point links, this field shows one of the following values: • 1 = point-to-point link • 3 = point-to-point link with assigned subnet

Output field	Description
State	The state of the conversation between the device and the neighbor. This field can have one of the following values: • Down - The initial state of a neighbor conversation. This value indicates that there has been no recent information received from the neighbor. • Attempt - This state is only valid for neighbors attached to non-broadcast networks. It indicates that no recent information has been received from the neighbor. • Init - A Hello packet has recently been seen from the neighbor. However, bidirectional communication has not yet been established with the neighbor. (The router itself did not appear in the neighbor's Hello packet.) All neighbors in this state (or higher) are listed in the Hello packets sent from the associated interface. • 2-Way - Communication between the two routers is bidirectional. This is the most advanced state before beginning adjacency establishment. The Designated Router and Backup Designated Router are selected from the set of neighbors in the 2-Way state or greater. • ExStart - The first step in creating an adjacency between the two neighboring routers. The goal of this step is to decide which router is the master, and to decide upon the initial Database Description (DD) sequence number. Neighbor conversations in this state or greater are called adjacencies. • Exchange - The router is describing its entire link state database by sending Database Description packets to the neighbor. Each Database Description packet has a DD sequence number, and is explicitly acknowledged. Only one Database Description packet can be outstanding at any time. In this state, Link State Request packets can also be sent asking for the neighbor's more recent advertisements. All adjacencies in Exchange state or greater are used by the flooding procedure. In fact, these adjacencies are fully capable of transmitting and receiving all types of OSPF routing protocol packets. • Loading - Link State Request packets are sent to the neighbor asking for the more recent advertisements that have been discovered (but not yet received) in the Exchange state. • Full - The neighboring routers are fully adjacent. These adjacencies will now appear in router links and network link advertisements.
Neigh Address	The IP address of the neighbor. For point-to-point links, the value is as follows: • If the **Pri** field is "1", this value is the IP address of the neighbor router's interface. • If the **Pri** field is "3", this is the subnet IP address of the neighbor router's interface.
Neigh ID	The neighbor router's ID.
Ev	The number of times the neighbor's state changed.
Opt	The sum of the option bits in the Options field of the Hello packet. This information is used by RUCKUS technical support. Refer to Section A.2 in RFC 2178 for information about the Options field in Hello packets.
Cnt	The number of LSAs that were retransmitted.

Examples

The following example displays information about OSPF neighbors.

```
device> show ip ospf neighbor

Port  Address        Pri  State     Neigh Address  Neigh ID     Ev Op Cnt
v10   10.1.10.1      1    FULL/DR   10.1.10.2      10.65.12.1    5  2  0
v11   10.1.11.1      1    FULL/DR   10.1.11.2      10.65.12.1    5  2  0
v12   10.1.12.1      1    FULL/DR   10.1.12.2      10.65.12.1    5  2  0
v13   10.1.13.1      1    FULL/DR   10.1.13.2      10.65.12.1    5  2  0
v14   10.1.14.1      1    FULL/DR   10.1.14.2      10.65.12.1    5  2  0
```

show ip ospf redistribute route

Displays routes that have been redistributed into OSPF.

Syntax

show ip ospf redistribute route [*A.B.C.D:M*]

Parameters

A.B.C.D:M

Specifies an IP address and mask for the output.

Modes

User EXEC mode

Examples

The following example shows sample output for the **show ip ospf redistribute route** command when no IP address and network mask are specified.

```
device> show ip ospf redistribute route

  4.3.0.0 255.255.0.0 static
  3.1.0.0 255.255.0.0 static
  10.11.61.0 255.255.255.0 connected
  4.1.0.0 255.255.0.0 static
```

The following example shows sample output for the **show ip ospf redistribute route** command when an IP address and network mask is specified.

```
device> show ip ospf redistribute route 192.213.1.0 255.255.255.254

  192.213.1.0 255.255.255.254 fwd 0.0.0.0 (0) metric 10 connected
```

show ip ospf routes

Displays OSPF calculated routes.

Syntax

show ip ospf routes [*A.B.C.D*]

Parameters

A.B.C.D

Specifies a destination IP address in dotted decimal format.

Modes

User EXEC mode

Command Output

The **show ip ospf routes** command displays the following information:

Output field	Description
Destination	The IP address of the route's destination.
Mask	The network mask for the route.
Path_Cost	The cost of this route path. (A route can have multiple paths. Each path represents a different exit port for the device.)
Type2_Cost	The type 2 cost of this path.
Path_Type	The type of path, which can be one of the following: • – Inter - The path to the destination passes into another area. – Intra - The path to the destination is entirely within the local area. – External1 - The path to the destination is a type 1 external route. – External2 - The path to the destination is a type 2 external route.
Adv_Router	The OSPF router that advertised the route to this device.
Link-State	The link state from which the route was calculated.
Dest_Type	The destination type, which can be one of the following: • – ABR - Area Border Router – ASBR - Autonomous System Boundary Router – Network - the network
State	The route state, which can be one of the following: • – Changed – Invalid – Valid This information is used by RUCKUS technical support.
Tag	The external route tag.

Output field	Description
Flags	State information for the route entry. This information is used by RUCKUS technical support.
Paths	The number of paths to the destination.
Out_Port	The router port through which the device reaches the next hop for this route path.
Next_Hop	The IP address of the next-hop router for this path.
Type	The route type, which can be one of the following: • – OSPF – Static Replaced by OSPF
State	State information for the path. This information is used by RUCKUS technical support.

Examples

The following example displays all OSPF-calculated routes.

```
device> show ip ospf route

OSPF Area 0x00000000 ASBR Routes 1:
      Destination     Mask            Path_Cost Type2_Cost Path_Type
      10.65.12.1      255.255.255.255 1         0          Intra
      Adv_Router      Link_State      Dest_Type State      Tag       Flags
      10.65.12.1      10.65.12.1      Asbr      Valid      0          6000
      Paths Out_Port  Next_Hop        Type      State
      1     v49       10.1.49.2       OSPF      21 01
      2     v12       10.1.12.2       OSPF      21 01
      3     v11       10.1.11.2       OSPF      21 01
      4     v10       10.1.10.2       OSPF      00 00
OSPF Area 0x00000041 ASBR Routes 1:
      Destination     Mask            Path_Cost Type2_Cost Path_Type
      10.65.12.1      255.255.255.255 1         0          Intra
      Adv_Router      Link_State      Dest_Type State      Tag       Flags
      10.65.12.1      10.65.12.1      Asbr      Valid      0          6000
      Paths Out_Port  Next_Hop        Type      State
      1     v204      10.65.5.251     OSPF      21 01
      2     v201      10.65.2.251     OSPF      20 d1
      3     v202      10.65.3.251     OSPF      20 cd
      4     v205      10.65.6.251     OSPF      00 00
OSPF Area Summary Routes 1:
      Destination     Mask            Path_Cost Type2_Cost Path_    Type
      10.65.0.0       255.255.0.0     0         0          Inter
      Adv_Router      Link_State      Dest_Type State      Tag       Flags
      10.1.10.1       0.0.0.0         Network   Valid      0          0000
      Paths Out_Port  Next_Hop        Type      State
      1     1/1/1     0.0.0.0         DIRECT    00 00
OSPF Regular Routes 208:
      Destination     Mask            Path_Cost Type2_Cost Path_Type
      10.1.10.0       255.255.255.252 1         0          Intra
      Adv_Router      Link_State      Dest_Type State      Tag       Flags
      10.1.10.1       10.1.10.2       Network   Valid      0          0000
      Paths Out_Port  Next_Hop        Type      State
      1     v10       0.0.0.0         OSPF      00 00
      Destination     Mask            Path_Cost Type2_Cost Path_Type
      10.1.11.0       255.255.255.252 1         0          Intra
      Adv_Router      Link_State      Dest_Type State      Tag       Flags
      10.1.10.1       10.1.11.2       Network   Valid      0          0000
      Paths Out_Port  Next_Hop        Type      State
      1     v11       0.0.0.0         OSPF      00 00
```

show ip ospf summary

Displays summary information for all OSPF instances.

Syntax

show ip ospf summary

Modes

User EXEC mode

Examples

The following example displays summarized OSPFv2 information.

```
device> show ip ospf summary

Seq Instance        Intfs   Nbrs    Nbrs-Full LSAs    Routes
1   default-vrf     5       2       1         12      2
```

show ip ospf traffic

Displays OSPF traffic details.

Syntax

show ip ospf traffic

Modes

User EXEC mode

Examples

The following example shows all OSPF traffic.

```
device> show ip ospf traffic

                 Packets Received         Packets Sent
Hello                          10                   10
Database                       90                   89
LSA Req                        12                   11
LSA Upd                        12                   12
LSA Ack                        12                   12
No Packet Errors!
```

show ip ospf trap

Displays OSPF trap status.

Syntax

show ip ospf trap

Modes

User EXEC mode

Examples

The following example shows all OSPF traffic.

```
device> show ip ospf trap

Interface State Change Trap:                      Enabled
Virtual Interface State Change Trap:              Enabled
Neighbor State Change Trap:                       Enabled
Virtual Neighbor State Change Trap:               Enabled
Interface Configuration Error Trap:               Enabled
Virtual Interface Configuration Error Trap:       Enabled
Interface Authentication Failure Trap:            Enabled
Virtual Interface Authentication Failure Trap:    Enabled
Interface Receive Bad Packet Trap:                Enabled
Virtual Interface Receive Bad Packet Trap:        Enabled
Interface Retransmit Packet Trap:                 Disabled
Virtual Interface Retransmit Packet Trap:         Disabled
Originate LSA Trap:                               Disabled
Originate MaxAge LSA Trap:                        Disabled
Link State Database Overflow Trap:                Disabled
Link State Database Approaching Overflow Trap:    Disabled
```

show ip ospf virtual link

Displays information about virtual links.

Syntax

show ip ospf virtual link [*index*]

Parameters

index

Shows information about all virtual links or one virtual link that you specify.

Modes

User EXEC mode

Examples

The following example shows information about all virtual links.

```
device> show ip ospf virtual link

Indx Transit Area     Router ID        Transit(sec) Retrans(sec) Hello(sec)
1    1                131.1.1.10       1            5            10
     Dead(sec)        events           state        Authentication-Key
     40               1                ptr2ptr      None
     MD5 Authentication-Key:       None
     MD5 Authentication-Key-Id:    None
     MD5 Authentication-Key-Activation-Wait-Time:      300
```

show ip ospf virtual neighbor

Displays information about virtual neighbors.

Syntax

show ip ospf virtual neighbor [*index*]

Parameters

index

Shows information about all virtual neighbors or one virtual neighbor that you specify.

Modes

User EXEC mode

Examples

The following example shows information about all virtual neighbors.

```
device> show ip ospf virtual neighbor

Indx Transit Area    Router ID       Neighbor address options
1    1               131.1.1.10      135.14.1.10      2
     Port   Address         state           events          count
     6/2/3          27.11.1.27      FULL            5               0
```

show ip pim all-vrf

Displays Protocol Independent Multicast (PIM) information across all active VRFs..

Syntax

show ip pim all-vrf [**bsr** | **error** | **flow-count** | **hw-resource** | **resource** | **rp-set** | **traffic** [**join-prune**] [**rx** | **tx**]]

show ip pim all-vrf interface [**ethernet** *unit/slot/port* | **lag** *number* | **loopback** *loopback-number* | **tunnel** *number* | **ve** *ve-number*]

show ip pim all-vrf neighbor neighbor [**ethernet** *unit/slot/port* | **lag** *number* | **tunnel** *number* | **ve** *ve-number*]

Parameters

bsr
Specifies bootstrap router (BSR) information.

error
Specifies PIM errors.

flow-count
Specifies flowcache counters.

hw-resource
Specifies usage and fail-count information for SG entries.

resource
Specifies the hardware resource information, such as hardware allocation, availability, and limit, for software data structures.

rp-set
Specifies rendezvous-point (RP)-set list for the device elected as the bootstrap router (BSR).

traffic
Specifies IPv4 PIM traffic statistics.

join-prune
Specifies displaying join and prune statistics.

rx
Specifies received PIM traffic statistics.

tx
Specifies transmitted PIM traffic statistics.

interface
Specifies an interface.

lag *number*
Specifies a LAG interface.

loopback *loopback-number*
Specifies a loopback interface.

tunnel *number*
Specifies a GRE tunnel.

ve *ve-number*
Specifies a virtual interface.

neighbor
Specifies an IP PIM neighbor.

Modes

User EXEC mode

Examples

The following example displays usage and fail-count information for SG entries for all active VRFs.

```
device> show ip pim all-vrf hw-resource

VRF Usage Fail
default-vrf 3072 8
blue 3072 0
------------------------------
Total usage 6144
System-max limit for SG entries: 6144
```

show ip pim anycast-rp

Displays information for an IPv4 PIM Anycast rendezvous point (RP) interface.

Syntax

show ip pim anycast rp [*anycast-rp-address*]

Modes

User EXEC mode

Usage Guidelines

MSDP and Anycast RP do not interoperate. If transitioning from MSDP to Anycast RP or vice versa, all RPs in the networkmust be configured for the same method of RP peering; either Anycast RP or MSDP.

Command Output

The **show ip pim anycast-rp** command displays the following information:

Output Field	Description
Number of Anycast RP:	The Number of Anycast RP specifies the number of Anycast RP sets in the multicast domain.
Anycast RP:	The Anycast RP address specifies a shared RP address used among multiple PIM routers.
ACL ID:	The ACL ID specifies the ACL ID assigned.
ACL Name	The ACL Name specifies the name of the Anycast RP set.
ACL Filter	The ACL Filter specifies the ACL filter state SET or UNSET.
Peer List	The Peer List specifies host addresses that are permitted in the Anycast RP set.

Examples

The following example displays information for a device that has been elected as the BSR.

```
device> show ip pim anycast-rp
               Number of Anycast RP: 1

Anycast RP: 100.1.1.1
  ACL Name: 200
  Peer List:
    1.1.1.1
    2.2.2.2
    3.3.3.3
```

show ip pim bsr

Displays bootstrap router (BSR) information.

Syntax

show ip pim bsr

Modes

User EXEC mode

Command Output

The **show ip pim bsr** command displays the following information:

Output Field.	Description
BSR address	The IP address of the interface configured as the PIM Sparse BSR.
BSR priority	The priority assigned to the interface for use during the BSR election process. During BSR election, the priorities of the candidate BSRs are compared and the interface with the highest BSR priority becomes the BSR.
Hash mask length	The number of significant bits in the IP multicast group comparison mask. This mask determines the IP multicast group numbers for which the device can be a BSR. The default is 32 bits, which allows the device to be a BSR for any valid IP multicast group number. **NOTE** This field appears only if this device is a candidate BSR.
Next bootstrap message in	Indicates how much time will pass before the BSR sends the next bootstrap message. The time is displayed in "hh:mm:ss" format. **NOTE** This field appears only if this device is the BSR.
Next Candidate-RP-advertisement message in	Indicates how much time will pass before the BSR sends the next candidate PR advertisement message. The time is displayed in "hh:mm:ss" format. **NOTE** This field appears only if this device is a candidate BSR.
RP	Indicates the IP address of the Rendezvous Point (RP). **NOTE** This field appears only if this device is a candidate BSR.
group prefixes	Indicates the multicast groups for which the RP listed by the previous field is a candidate RP. **NOTE** This field appears only if this device is a candidate BSR.

Output Field.	Description
Candidate-RP-advertisement period	Indicates how frequently the BSR sends candidate RP advertisement messages. **NOTE** This field appears only if this device is a candidate BSR.

Examples

The following example shows information for a device that has been elected as the BSR.

```
device> show ip pim bsr
PIMv2 Bootstrap information for Vrf Instance : default-vrf
------------------------------------------------------------------------------
  This system is the Elected BSR
  BSR address: 1.51.51.1. Hash Mask Length 32. Priority 255.
  Next bootstrap message in 00:01:00
  Configuration:
    Candidate loopback 2 (Address 1.51.51.1). Hash Mask Length 32. Priority 255.
Next Candidate-RP-advertisment in 00:01:00
  RP: 1.51.51.1
    group prefixes:
    224.0.0.0 / 4
  Candidate-RP-advertisement period: 60
```

The following example shows information for a device that is not the BSR.

```
device(config)# show ip pim bsr
PIMv2 Bootstrap information for Vrf Instance : default-vrf
------------------------------------------------------------------------------
  BSR address: 1.51.51.1. Hash Mask Length 32. Priority 255.
Next Candidate-RP-advertisment in 00:00:30
  RP: 1.51.51.3
    group prefixes:
    224.0.0.0 / 4
  Candidate-RP-advertisement period: 60
```

show ip pim counter

Displays Protocol Independent Multicast (PIM) counter and statistics information.

Syntax

show ip pim counter [**nsr** | **tbp**]

Parameters

nsr

Specifies non-stop routing (NSR) counter and statistics information.

tbp

Specifies multicast Traverse by Parts (TBP) statistics.

Modes

User EXEC mode

Examples

The following example displays PIM NSR counter and statistics information.

```
device> show ip pim counter nsr

Mcache sync (entity id: 203)
  pack: 0
  unpack: 0
  ack: 0
RPset sync (entity id: 201)
  pack: 0
  unpack: 0
  ack: 0
BSR status (entity id: 202)
  pack: 1
  unpack: 0
  ack: 1
```

The following example displays PIM counter and statistics information.

```
device> show ip pim counter

Event Callback:
   DFTVlanChange    :          0               VlanPort         :          0

LP to MP IPCs:
   SM_REGISTER      :          0               MCAST_CREATE     :         80
   S_G_AGEOUT       :        880               WRONG_IF         :       2055
   ABOVE_THRESHOLD  :        880               MCAST_FIRST_DATA :       1840
   SET KAT          :       1003               SET KAT INFINITY :        960

MP to LP IPCs:
   INIT             :       7601               INSERT_VPORT     :       1398
   DELETE_VPORT     :       6196               DELETE_VIF       :       2240
   MOVE_VPORT       :          0               DEL_ENTRY        :       1920
   INSERT_SOURCE    :          0               DELETE_SOURCE    :          0
   RESET_SRC_LIST   :          0               MOVE_TNNL_PORT   :          0
   FLAG_CHANGE      :       5200               FDB_VIDX_CHANGE  :          0
   OIF_FLAG_CHANGE  :          0

Error Counters:
   PIM_PKT_DRP      :          0               PIM_PKT_DRP(Glb) :          0
   MCGRP_PKT_DRP    :          0               MCGRP_PKT_DRP(Gl):          0
   PIM_THR_DRP      :          0               PIM_THR_DRP(Glb) :          0
   MCGRP_THR_DRP    :          0               MCGRP_THR_DRP(Gl):          0
   BDRY_DRP         :          0               RPSET_MAXED      :          0
```

History

Release version	Command history
08.0.90	The output for this command was modified to include information about dropped packets due to configured multicast boundaries.

show ip pim counter tbp

Displays multicast Traverse by Parts (TBP) statistics.

Syntax

show ip pim counter tbp

Modes

User EXEC mode

Command Output

The **show ip pim counter tbp** command displays the following information:

Output Field	Description
Mcache sync	The mcache NSR sync queue that carries the NSR sync message for mcache updates.
pack	The number of NSR sync messages that are packed from the active module to the standby module.
unpack	The number of NSR sync messages that are received and unpacked by the standby module.
ack	The number of NSR sync acknowledgements received by the active module.
RPset sync	The RPset sync queue that carries the NSR sync message for RPset update.
BSR status	The BSR status sync queue that carries the NSR sync message for BSR information update.

Examples

The following example displays PIM TBP counter and statistic information.

```
device> show ip pim counter tbp
```

show ip pim dense

Displays PIM Dense configuration information.

Syntax

show ip pim dense

Modes

User EXEC mode

Command Output

The **show ip pim dense** command displays the following information:

Field	Description
Maximum Mcache	The maximum number multicast cache entries allowed on the device.
Current Count	The number of multicast cache entries currently used.
Hello interval	How frequently the device sends hello messages out the PIM dense interfaces.
Neighbor timeout	The interval after which a PIM device will consider a neighbor to be absent.
Join/Prune interval	How long a PIM device will maintain a prune state for a forwarding entry.
Inactivity interval	How long a forwarding entry can remain unused before the device deletes it.
Hardware Drop Enabled	Displays Yes if the Passive Multicast Route Insertion feature is enabled and No if it is not.
Prune Wait Interval	The amount of time a PIM device waits before stopping traffic to neighbor devices that do not want the traffic. The value can be from zero to three seconds. The default is three seconds.
Graft Retransmit interval	The interval between the transmission of graft messages.
Prune Age	The number of packets the device sends using the path through the RP before switching to using the SPT path.
Route Precedence	The route precedence configured to control the selection of routes based on the four route types: • Non-default route from the mRTM • Default route from the mRTM • Non-default route from the uRTM • Default route from the uRTM

Examples

The following example displays PIM Dense configuration information.

```
device> show ip pim dense

Global PIM Dense Mode Settings
  Maximum Mcache            : 12992    Current Count                    : 2
  Hello interval            : 30       Neighbor timeout                 : 105
  Join/Prune interval       : 60       Inactivity interval              : 180
  Hardware Drop Enabled     : Yes      Prune Wait Interval              : 3
  Graft Retransmit interval : 180      Prune Age                        : 180
  Route Precedence          : mc-non-default mc-default uc-non-default uc-default
```

show ip pim error

Displays information for Protocol Independent Multicast (PIM) error counters.

Syntax

show ip pim error

Modes

User EXEC mode

Examples

The following example displays information for PIM error counters, including information about Join and Prune configurations and dropped register messages.

```
device> show ip pim error
Vrf Instance : default-vrf
-------------------------------------
Total SM interfaces: 2
Total DM interfaces: 0
Protocol errors:
PIM_PKT_DRP   : 0  PIM_PKT_DRP(Glb)       : 0
MCGRP_PKT_DRP : 0  MCGRP_PKT_DRP(Glb)     : 0
PIM_THR_DRP   : 0  PIM_THR_DRP(Glb)       : 0
MCGRP_THR_DRP : 0  MCGRP_THR_DRP(Gl)      : 0
RPSET_MAXED   : 0  Join/Prune Drops      : 1999

Forwarding Errors (Packet Drops):
RPF-Fail: 0 No-RP   : 0 IfMsmtch: 0
OIFEmpty: 0 InvldIf : 0 TTLXpire: 0
NoFwEntr: 0 TrkMove : 0 PortMove: 0
NoCause : 0 FwEntrFl: 0 ResFail : 0
SSMNoEnt: 0 InvldGrp: 0 Bidir   : 0
WrongIf : 0 IPCError: 0 IPCBufEr: 0DMACErr    : 0 REGRXDRP: 0  REGRPDRP: 0
REGFHDRP  : 0
```

History

Release version	Command history
09.0.10	The output for the command was enhanced to include information about Join and Prune configurations and dropped register messages.

show ip pim group

Displays PIM group information.

Syntax

show ip pim group

Modes

User EXEC mode

Command Output

The **show ip pim group** command displays the following information:

Output Field	Description
Total number of groups	Lists the total number of IP multicast groups the device is forwarding. **NOTE** This list can include groups that are not PIM Sparse groups. If interfaces on the device are configured for regular PIM (dense mode), these groups are listed too.
Index	The index number of the table entry in the display.
Group	The multicast group address
Ports	The device ports connected to the receivers of the groups.

Examples

The following example displays PIM group information.

```
device> show ip pim group
Total number of groups for VRF default-vrf: 7
1     Group 226.0.34.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
2     Group 226.0.77.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
3     Group 226.0.120.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
4     Group 226.0.163.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
5     Group 226.0.206.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
6     Group 226.0.249.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
7     Group 226.0.30.0
      Group member at  e1/2/9: v59
      Group member at  e1/1/16: v57
```

show ip pim hw-resource

Displays usage and fail-count information for SG entries.

Syntax

show ip pim hw-resource

Modes

User EXEC mode

Command Output

The **show ip pim hw-resource** command displays the following information:

Output field	Description
VRF	Name of the VRF.
Usage	Number of allocated SG entries in this VRF.
Fail	Number of failures while allocating SG entries in this VRF (due to the system-max limit.
Total usage	Total number of SG entries in the system (all VRFs).
System-max limit for SG entries	Configured system limit for pim-hw-mcache.

Examples

The following sample out from the **show ip pim all-vrf hw-resource** command displays usage and fail-count information for SG entries on each VRF.

```
device# show ip pim all-vrf hw-resource
VRF           Usage     Fail
default-vrf   3072      8
blue          3072      0
-------------------------------
Total usage   6144

System-max limit for SG entries: 6144
```

show ip pim interface

Displays information for PIM interfaces.

Syntax

show ip pim interface [**ethernet** *unit/slot/port* | **lag** *number* | **loopback** *loopback-number* | **tunnel** *number* | **ve** *ve-number*]

Parameters

ethernet *unit/slot/port*

Specifies a physical interface. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

lag *number*

Specifies a LAG interface.

loopback *loopback-number*

Specifies a loopback interface.

tunnel *number*

Specifies a GRE tunnel.

ve *ve-number*

Specifies a virtual interface.

Modes

Privileged EXEC mode

Command Output

The **show ip pim interface** command displays the following information:

Output Field	Description
Interface	Name of the interface.
Local Address	IP address of the interface.
Mode	PIM mode, dense or sparse..
St	PIM status for this interface, enabled or disabled.
Designated Router Address, Port	Address, port number of the designated router.
TTL Thr	Time to live threshold. Multicast packets with TTL less than this threshold value are not be forwarded on this interface.
Multicast Boundary	Multicast boundary ACL, if one exists.
VRF	Name of the VRF.
DR Prio	Designated router priority assigned to this interface.
Override Interval	Effective override interval in milliseconds.

Examples

The following example displays output from the **show ip pim interface** command, showing that ACL 10 is applied to interface 1/1/9 to control neighbor access.

```
device> show ip pim interface
Flags    : SM  - Sparse Mode v2, DM - Dense Mode v2, P - Passive Mode

--------+---------------+-----+---+-------+---+-----+-------+-------+----+--------+

Int'face|Local          |Mode |St |Des Rtr|TTL|Mcast| Filter| VRF   |DR  |Override
        |Address        |     |   |AddPort|Thr|Bndry|  ACL  |       |Prio|Interval
--------+---------------+-----+---+-------+---+-----+-------+-------+----+--------+
e1/1/1   5.5.5.5         SM   Ena  Itself   1  None   None   default  1   3000ms
e1/1/9   15.1.1.5        SM   Ena  Itself   1  None   10     default  1   3000ms
e1/1/12  12.12.12.1      SM   Dis  Itself   1  None   None   default  1   3000ms
v20      21.21.21.22     SM   Ena  Itself   1  None   None   default  1   3000ms
v60      60.60.60.1      SM   Ena  Itself   1  None   None   default  1   3000ms
v310     110.110.110.2   SM   Dis  Itself   1  None   None   default  1   3000ms
v360     160.160.160.1   SM   Dis  Itself   1  None   None   default  1   3000ms
l2       4.4.4.4         SM   Ena  Itself   1  None   None   default  1   3000ms
l3       10.10.10.10     SM   Ena  Itself   1  None   None   default  1   3000ms
Total Number of Interfaces : 9
```

History

Release version	Command history
08.0.20a	This command was modified to display neighbor filter information.

show ip pim jp-policy

Displays IPv4 Protocol Independent Multicast (PIM) Join and Prune policy configurations.

Syntax

show ip pim jp-policy [**vrf** *vrf-name*]

Modes

Privileged EXEC mode

Examples

The following example displays PIM (RP, G), (*, G), and (S, G) Join and Prune policy configuration information and the number of Join and Prune drops for each such policy.

```
device> show ip pim jp-policy
Vrf Instance : default-vrf
---------------------------
(RP, G) JP policy
---------
(RP, G) JP policy count: 3
RP-Address     ACL Name     (RP, G) Join Drops     (RP, G) Prune Drops
10.9.9.9       rp-wg-acl    1500                   499
22.9.9.9       22           1888                   1000
100.9.9.9      122          921                    300
---------------------------
(*, G) and (S, G) JP policy
---------
ACL Name     (*, G) Join Drops     (*, G) Prune Drops      (S, G) Join Drops     (S, G) Prune Drops
wg-sg-acl    1500                  499                      385                   139
```

History

Release version	Command history
09.0.10	This command was introduced.

show ip pim mcache

Displays the PIM multicast cache.

Syntax

show ip pim mcache [*source-address* [*group-address*] | *group-address* | **counts** | **dense** | **dit-idx** *dit-idx* | **g_entries** | **receiver** { **ethernet** *unit/slot/port* | **lag** *number* | **vlan** *vlan-id* } | **sg_entries** | **sparse** | **ssm**]

show ip pim mcache counts [*source-address* [*group-address*] | *group-address* | **dense** | **dit-idx** *dit-idx* | **g_entries** | **receiver** { **ethernet** *unit/slot/port* | **lag** *number* | **vlan** *vlan-id* } | **sg_entries** | **sparse** | **ssm**]

Parameters

source-address
Specifies the multicast cache source address.

group-address
Specifies the multicast cache group address.

counts
Specifies the number of entries.

dense
Specifies displaying only the PIM Dense Mode entries.

dit-idx *dit-idx*
Specifies displaying all entries that match a specified downstream interface (DIT).

g_entries
Specifies displaying only the (*, G) entries.

receiver
Specifies displaying all entries that egress a specified interface.

ethernet *unit/slot/port*
Specifies a physical interface. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

lag *number*
Specifies a LAG interface.

vlan *vlan-id*
Specifies a VLAN.

sg_entries
Specifies displaying only the (S, G) entries.

sparse
Specifies displaying only the PIM Sparse Mode entries.

ssm
Specifies displaying only the SSM entries.

Modes

Privileged EXEC mode

Command Output

The **show ip pim mcache** command displays the following information:

Output Field	Description
Total entries in mcache	The total number of PIM mcache entries
MJ	Membership Join
MI	Membership Include
ME	Membership Exclude - Legend for the mcache entry printed once per page, it gives the explanation of each of the flags used in the entry.
BR	Blocked RPT
BA	Blocked Assert
BF	Blocked Filter
BI	Blocked IIF
Uptime	Shows the entry uptime
upstream neighbor	Shows the upstream neighbor for the Source/RP based on the type of entry. For (*,G) it shows the upstream neighbor towards the RP. For (S,G) entries it shows the upstream neighbor towards the source.
Flags	Flags Represent Entry flags in hex format in the braces. And indicates the meaning of the flags set in the abbreviated strings with the following explanations. Only shows the flags which are set. SM - Shows If the entry is created by PIM Sparse Mode DM - Shows If DM mode entry is enabled SSM - Shows If the SSM mode entry is enabled RPT - Shows If the entry is on the rendezvous point (RP) SPT - Shows If the entry is on the source tree LSRC - Shows If the source is in a directly-connected interface LRcv - Shows If the receiver is directly connected to the router REG - if the data registration is in progress L2REG - if the source is directly connected to the router REGSUPP - if the register suppression timer is running RegProbe HW - Shows If the candidate for hardware forwarding is enabled FAST - Shows If the resources are allocated for hardware forwarding TAG - Shows If there is a need for allocating entries from the replication table MSDPADV - Shows If RP is responsible for the source and must be advertised to its peers. NEEDRTE - Shows If there is no route to the source and RP is available PRUNE - Shows If PIM DM Prune to upstream is required
RP	Shows the IP address of the RP.

Output Field	Description
fast ports	Shows forwarding port mask.
AgeSltMsk	Shows a value of 1 if the entry is programmed in hardware, and a value of 0 if it is not programmed in hardware.
L2 FID	Shows the hardware resource allocated for the traffic switched to receivers in the ingress VLAN.
DIT	Shows the hardware resource allocated for routed receivers.
RegPkt	Shows Count of Packets forwarded due to the Register decapsulation.
Number of matching entries	Shows the total number of mcache entries matching a particular multicast filter specified.
Outgoing interfaces Section	This section consists of three parts. L3 OIFs, L2OIFs and Blocked OIFs. And each section has Format of L3/L2/Blocked followed by (HW/SW) followed by count of the number of OIF in each section. Additionally, each section displays the OIFs one per line. And shows the OIF in the format eth/Tr(Vlan) followed by uptime/expiry time, followed by the Flags associated with each OIF.
L3	Shows whether the traffic is routed out of the interface.
L2	Shows whether the traffic is switched out of the interface.
HW	Shows whether the entry is hardware forwarded.
SW	Shows whether the entry is software forwarded
Eth/Tr(VL1)	Shows the outgoing interface on the specified VLAN.
Flags (explanation of flags in the OIF section)	Shows the flags set in each of the Outgoing interface in the abbreviated strings with the following explanations. Legend of this shown at the top of each entry IM - Immediate IH - Inherited MJ - Membership Join MI - Membership Include ME - Membership Exclude BR - Blocked due to SG RPT BA - Blocked due to Assert BF - Blocked due to Filter BI - Blocked IIF (Incoming interface) matches OIF
Src-Vlan	Shows the VLAN associated with the ingress interface.
MCTPEERF - Traffic Forw By Cluster Peer CCEP	Applies only to Layer 3 multicast routing over MCT. This means multicast traffic for this stream is forwarded by cluster peer [remote] CCEP port because of flow load balancing

Examples

The following example shows all PIM multicast cache entries.

```
device> show ip pim mcache

IP Multicast Mcache Table
Entry Flags : SM - Sparse Mode, SSM - Source Specific Multicast, DM - Dense Mode
       RPT - RPT Bit, SPT - SPT Bit, LSRC - Local Source, LRCV - Local Receiver
       HW - HW Forwarding Enabled, FAST - Resource Allocated, TAG - Need For
        Replication Entry
       REGPROB - Register In Progress, REGSUPP - Register Suppression Timer
       MSDPADV - Advertise MSDP, NEEDRTE - Route Required for Src/RP, PRUN - DM
        Prune Upstream
Interface Flags: IM - Immediate, IH - Inherited, WA - Won Assert
       MJ - Membership Join, MI - Membership Include, ME - Membership Exclude
       BR - Blocked RPT, BA - Blocked Assert, BF - Blocked Filter, BI - Blocked IIF
Total entries in mcache: 20
1  (140.140.140.3, 225.0.0.1) in v340 (tag e1/8/1), Uptime 00:00:02
  Source is directly connected
  Flags (0x200004e1) DM HW FAST TAG
  fast ports: ethe 1/4/6 ethe 1/8/26
  AgeSltMsk: 1, L2 FID: 8188, DIT: 3
  Forwarding_oif: 2
  L3 (HW) 2:
    TR(e1/4/6,e1/4/6)(VL330), 00:00:02/0, Flags: IM
    e1/8/26(VL310), 00:00:02/0, Flags: IM
  Src-Vlan: 340
```

The following example shows the PIM multicast cache for the specified address.

```
device> show ip pim mcache 10.140.140.14 230.1.1.9

IP Multicast Mcache Table
Entry Flags : SM - Sparse Mode, SSM - Source Specific Multicast, DM - Dense Mode
     RPT - RPT Bit, SPT - SPT Bit, LSRC - Local Source, LRCV - Local Receiver
     HW - HW Forwarding Enabled, FAST - Resource Allocated, TAG - Need For Replication Entry
     REGPROB - Register In Progress, REGSUPP - Register Suppression Timer
     MSDPADV - Advertise MSDP, NEEDRTE - Route Required for Src/RP, PRUN - DM Prune Upstream
Interface Flags: IM - Immediate, IH - Inherited, WA - Won Assert
     MJ - Membership Join, MI - Membership Include, ME - Membership Exclude
     BR - Blocked RPT, BA - Blocked Assert, BF - Blocked Filter, BI - Blocked IIF
Total entries in mcache: 20
1 (10.140.140.14, 230.1.1.9) in v1001 (tag e1/4/29), Uptime 00:03:12
  upstream neighbor 10.11.11.13
  Flags (0x600680e1) SM SPT LRCV HW FAST TAG
  fast ports: ethe 1/4/29 ethe 1/5/2
  AgeSltMsk: 1, L2 FID: 8188, DIT: 8
  Forwarding_oif: 3, Immediate_oif: 0, Blocked_oif: 0
  L3 (HW) 2:
  e1/4/29(VL13), 00:03:12/0, Flags: MJ
  e1/5/2(VL1004), 00:03:12/0, Flags: MJ
  L2 (HW) 1:
  e1/5/2, 00:00:07/0, Flags: MJ
  L2 MASK: ethe 1/5/2
  Src-Vlan: 1001
```

The following example shows the PIM multicast cache for the specified DIT.

```
device> show ip pim mcache dit-idx 2

IP Multicast Mcache Table
Entry Flags    : SM  - Sparse Mode, SSM - Source Specific Multicast, DM - Dense Mode
                 RPT    - RPT Bit, SPT - SPT Bit, LSRC - Local Source, LRCV - Local Receiver
                 HW - HW Forwarding Enabled, FAST - Resource Allocated, TAG - Need For Replication
Entry
                 REGPROB - Register In Progress, REGSUPP - Register Suppression Timer
                 MSDPADV - Advertise MSDP, NEEDRTE - Route Required for Src/RP,  PRUN - DM Prune
Upstream
Interface Flags: IM - Immediate, IH - Inherited, WA - Won Assert
                 MJ - Membership Join, MI - Membership Include, ME - Membership Exclude
                 BR - Blocked RPT, BA - Blocked Assert, BF - Blocked Filter, BI - Blocked IIF
Total entries in mcache: 30
1     (20.20.20.100, 225.1.1.1) in v220 (tag e1/1/13), Uptime 07:12:07
      upstream neighbor 220.220.220.1
      Flags (0x200680e1) SM SPT LRCV HW FAST TAG
      fast ports: ethe 1/1/11
      AgeSltMsk: 1,  IPMC:   414 , RegPkt: 0
      Forwarding_oif: 1, Immediate_oif: 0, Blocked_oif: 0
      L3 (HW) 1:
          e1/1/11(VL40), 07:12:07/0, Flags: MJ
      Src-Vlan: 220
2     (20.20.20.100, 225.1.1.2) in v220 (tag e1/1/13), Uptime 00:01:00
      upstream neighbor 220.220.220.1
      Flags (0x200680e1) SM SPT LRCV HW FAST TAG
      fast ports: ethe 1/1/11
      AgeSltMsk: 1, IPMC:   414 , RegPkt: 0
      Forwarding_oif: 1, Immediate_oif: 0, Blocked_oif: 0
      L3 (HW) 1:
          e1/1/11(VL40), 00:01:00/0, Flags: MJ
      Src-Vlan: 220
3     (20.20.20.100, 225.1.1.3) in v220 (tag e1/1/13), Uptime 00:01:00
      upstream neighbor 220.220.220.1
      Flags (0x200680e1) SM SPT LRCV HW FAST TAG
      fast ports: ethe 1/1/11
      AgeSltMsk: 1, IPMC:   414 , RegPkt: 0
      Forwarding_oif: 1, Immediate_oif: 0, Blocked_oif: 0
      L3 (HW) 1:
          e1/1/11(VL40), 00:01:00/0, Flags: MJ
      Src-Vlan: 220
```

The following example shows the PIM multicast cache with Layer 3 multicast routing over MCT, showing that multicast traffic for a stream is forwarded by a cluster peer CCEP port because of flow load balancing.

```
device> show ip pim mcache

IP Multicast Mcache Table
Entry Flags    : SM  - Sparse Mode, SSM - Source Specific Multicast, DM - Dense Mode
                 RPT    - RPT Bit, SPT - SPT Bit, LSRC - Local Source, LRCV - Local Receiver
                 HW - HW Forwarding Enabled, FAST - Resource Allocated, TAG - Need For Replication Entry
                 REGPROB - Register In Progress, REGSUPP - Register Suppression Timer
                 MSDPADV - Advertise MSDP, NEEDRTE - Route Required for Src/RP,  PRUN - DM Prune
Upstream
Interface Flags: IM - Immediate, IH - Inherited, WA - Won Assert, MCTPEERF - Traffic Forw By Cluster
Peer CCEP
                 MJ - Membership Join, MI - Membership Include, ME - Membership Exclude
                 BR - Blocked RPT, BA - Blocked Assert, BF - Blocked Filter, BI - Blocked IIF
Total entries in mcache: 2

1     (39.39.39.1, 229.1.1.10) in v40 (tag e2/1/12), Uptime 00:21:31
      upstream neighbor 40.40.40.175
      Flags (0x200284e1) SM SPT HW FAST TAG
      fast ports: ethe 2/1/11
      AgeSltMsk: 1, IPMC:     4
      Forwarding_oif: 1, Immediate_oif: 1, Blocked_oif: 0
      L3 (HW) 1:
          TR(e2/1/11,e2/1/11)(VL10), 00:21:31/178, Flags: IM  MCTPEERF
      Src-Vlan:   40
```

History

Release version	Command history
08.0.30	This command was modified to show output for Layer 3 multicast routing over MCT.
08.0.30h	The output of the command was modified to remove the rate counter.
08.0.50	The output of the command was modified to remove the AvgRate and Profile entries.

show ip pim neighbor

Displays information about PIM neighbors.

Syntax

show ip pim neighbor [**ethernet** *unit/slot/port* | **lag** *number* | **tunnel** *number* | **ve** *ve-number*]

Parameters

ethernet *unit/slot/port*

Specifies a physical interface. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

lag *number*

Specifies a LAG interface.

tunnel *number*

Specifies a GRE tunnel.

ve *ve-number*

Specifies a virtual interface.

Modes

User EXEC mode

Command Output

The **show ip pim neighbor** command displays the following information:

Output Field	Description
Port	The interface through which the device is connected to the neighbor.
Phyport	When there is a virtual interface, this is the physical port to which the neighbor is connected.
Neighbor	The IP interface of the PIM neighbor.
Holdtime sec	Indicates how many seconds the neighbor wants this device to hold the entry for this neighbor in memory. The neighbor sends the Hold Time in Hello packets: • If the device receives a new Hello packet before the Hold Time received in the previous packet expires, the device updates its table entry for the neighbor. • If the device does not receive a new Hello packet from the neighbor before the Hold time expires, the device assumes the neighbor is no longer available and removes the entry for the neighbor.
Age sec	The number of seconds since the device received the last hello message from the neighbor.
UpTime sec	The number of seconds the PIM neighbor has been up. This timer starts when the device receives the first Hello messages from the neighbor.

Output Field	Description
VRF	The VRF in which the interface is configured. This can be a VRF that the port was assigned to or the default VRF of the device.
Priority	The DR priority that is used in the DR election process. This can be a configured value or the default value of 1.

Examples

The following example shows information about PIM neighbors.

```
device> show ip pim neighbor

--------+--------+---------------+--------+---+---------+---------+-----+------------+-----------+----
Port    |PhyPort |Neighbor       |Holdtime|T  |PropDelay|Override |Age  |UpTime      |VRF        |Prio
        |        |               |sec     |Bit|msec     |msec     |sec  |            |           |
--------+--------+---------------+--------+---+---------+---------+-----+------------+-----------+----
v2       e1/1/1     2.1.1.2         105      1   500       3000      0     00:44:10  default-vrf 1
v4       e1/2/2     4.1.1.2         105      1   500       3000      10    00:42:50  default-vrf 1
v5       e1/1/4     5.1.1.2         105      1   500       3000      0     00:44:00  default-vrf 1
v22      e1/1/1     22.1.1.1        105      1   500       3000      0     00:44:10  default-vrf 1
Total Number of Neighbors : 4
```

show ip pim optimization

Displays PIM optimization information.

Syntax

show ip pim optimization [**dit-idx** *value* | **vlan-fid** *value*]

Parameters

dit-idx *value*

Represents the IPMC index.

vlan-fid *value*

Represents the software VLAN index that stores the Layer 2 OIF sets.

Modes

User EXEC mode

Command Output

The **show ip pim optimization** command displays the following information:

Output field	Description
IPMC	The IP multicast entry number.
SetId	Identifies the internal software resource used in sharing (optimizing).
Set	The set manager database ID.
SW-VIDX	The internal software VLAN index used for sharing Layer 2 OIFs.

Examples

The following example displays optimization information for all VRFs.

```
device> show ip pim optimization dit-idx

Displaying Optimization information for all vrfs
Total IPMCs Allocated:    2; Available: 7831; Failed:    0
Index    IPMC          SetId         Users         Set
   1.      374         0x30eb38c8      100 {[VLAN <30>:Port <37/2/2>],}
   2.      363         0x305dd728      100 {[VLAN <30>:Port
<36/1/48>],[VLAN <30>:Port <31/1/48>],
                                            [VLAN <30>:Port <24/1/48>],}
Sharability Coefficient:  99%
```

The following example displays the PIM optimization vlan-fid information.

```
device> show ip pim optimization vlan-fid

Total SW-VIDXs Allocated:    2; Available: 4093; Failed:    0
Index    SW-VIDX       SetId         Users         Set
   1.       1          0x30e98448        1 {Port <37/2/2>,}
   2.       5          0x305d68a0        1 {Port <36/1/48>,Port
<31/1/48>,Port <24/1/48>,}
Sharability Coefficient:   0%
```

History

Release version	Command history
08.0.50	This command was introduced.

show ip pim prune

Displays all multicast cache entries that are currently in a pruned state and have not yet aged out.

Syntax

show ip pim prune

Modes

Privileged EXEC mode

Examples

The following example shows all multicast cache entries that are currently in a pruned state and have not yet aged out:

```
device> show ip pim prune
    1 (104.1.1.2 231.0.1.1):
   e1/2/2,1/2/2(150)
    2 (108.1.1.100 231.0.1.1):
   e1/2/2,1/2/2(150)
    3 (104.1.1.2 231.0.1.2):
   e1/2/2,1/2/2(150)
    4 (108.1.1.100 231.0.1.2):
   e1/2/2,1/2/2(150)
    5 (108.1.1.100 231.0.1.3):
   e1/2/2,1/2/2(150)
    6 (104.1.1.2 231.0.1.4):
   e1/2/2,1/2/2(150)
    7 (108.1.1.100 231.0.1.4):
   e1/2/2,1/2/2(150)
    8 (104.1.1.2 231.0.1.5):
   e1/2/2,1/2/2(150)
    9 (108.1.1.100 231.0.1.5):
   e1/2/2,1/2/2(150)
Total Prune entries: 9
```

show ip pim resource

Displays PIM resource information.

Syntax

show ip pim resource

Modes

User EXEC mode

Examples

The following example displays output from the **show ip pim resource** command.

```
device> show ip pim resource
Global PIM Parameters :-
GLOBAL Ipv4 MULTICAST CLASS Size:6135 bytes
GLOBAL Ipv4 PIM CLASS Size:2614 bytes
MULTICAST IPV4 CLASS Num alloc:0, System max:129, Size:2932 bytes
PIM IPV4 CLASS  Num alloc:0, System max:129, Size:11156
 Vrf Instance : default-vrf
-------------------------------------
                       alloc in-use  avail get-fail    limit  get-mem  size init
NBR list                 256      1    255        0      512        1    96  256
RP set list              256      1    255        0     1536        1    49  256
Static RP                  0      0      0        0       64        0    42   64
Anycast RP                 0      0      0        0       64        0   190   64
RP Elem                 2048      1   2047        0     8192        1    30 2048
LIF Entry                  0      0      0        0      512        0    47  512
Timer                    256      0    256        0    59392        3    63  256
Prune                      0      0      0        0    29696        0    34  128
pimsm J/P elem          8192      0   8192        0    48960   180224    29 1024
Timer Data               256      0    256        0    59392     8192    28  256
mcache SLIB Sync       10240      0  10240        0   296960    16384    34 1280
mcache                  8192      0   8192        0    16384     8192  5751  256
graft if no mcache         0      0      0        0    45704        0    64  197
HW replic vlan         16000      0  16000        0   464000     8192    66 2000
HW replic port          8192      0   8192        0   237568     8192    79 1024
Assert Info                0      0      0        0   464000        0    56 2000
pim glb grp             8192      0   8192        0    59392     8192    46  256
pim glb grp/nbr port   16384      1  16383        0   237568     8193    12 1024
pim glb grp/nbr vlan   16000      1  15999        0   464000     8193    20 2000
pim glb grp src         8192      0   8192        0    59392     8192    24  256
repl entry(Global)      8192      0   8192        0   237568     8192   386 1024
IGMP Resources(All Vrfs):
  Groups                8192      0   8192        0    59392     8192  1862  256
  group-memberships     8192      0   8192        0    59392     8192   146  256
  sources              13312      0  13312        0    59392   879230    56  256
  client sources           0      0      0        0    59392        0    84  256
  ssm-map                256      1    255        0      256        1    18  256
  ssm-map-sources          0      0      0        0    59392        0  1024  256
Hardware-related Resources:
 HW IPMC: 0 allocated for MCAST4-ROUTING of total allocated 354
Total (S,G) entries 0
Total SW FWD entries 0
  Total sw w/Tag IPMC entries 0
  Total sw w/Tag invalid IPMC entries 0
Total HW FWD entries 0
  Total hw w/Tag IPMC entries 0
  Total hw w/Tag invalid IPMC entries 0
```

History

Release version	Command history
08.0.95	The output for this command was enhanced to display more hardware resource information.

show ip pim rp-candidate

Displays candidate rendezvous point (RP) information.

Syntax

show ip pim rp-candidate

Modes

User EXEC mode

Command Output

The **show ip pim rp-candidate** command displays the following information:

Output Field	Description
Candidate-RP-advertisement in	How time will pass before the BSR sends the next RP message. The time is displayed in "hh:mm:ss" format. **NOTE** This field appears only if this device is a candidate RP.
RP	The IP address of the RP. **NOTE** This field appears only if this device is a candidate RP.
group prefixes	The multicast groups for which the RP listed by the previous field is a candidate RP. **NOTE** This field appears only if this device is a candidate RP.
Candidate-RP-advertisement period	How frequently the BSR sends candidate RP advertisement messages. **NOTE** This field appears only if this device is a candidate RP.

Examples

The following example shows information for a candidate RP.

```
device> show ip pim rp-candidate

Next Candidate-RP-advertisement in 00:00:10
  RP: 207.95.7.1
    group prefixes:
    224.0.0.0 / 4
  Candidate-RP-advertisement period: 60
```

show ip pim rp-hash

Displays rendezvous-point (RP) information for a PIM Sparse group.

Syntax

show ip pim rp-hash *group-address*

Parameters

group-address

Specifies the address of a PIM Sparse IP multicast group.

Modes

Privileged EXEC mode

Command Output

The **show ip pim rp-hash** command displays the following information:

Output Field	Description
RP	Indicates the IP address of the RP for the specified PIM Sparse group.
Info source	Indicates the source of the RP information. It can be a static-RP configuration or learned via the bootstrap router. If RP information is learned from the boot strap, the BSR IP address is also displayed.

Examples

The following example shows RP information for a PIM Sparse group.

```
device> show ip pim rp-hash 239.255.162.1

  RP: 207.95.7.1, v2
    Info source: 207.95.7.1, via bootstrap
```

show ip pim rp-map

Displays rendezvous-point (RP)-to-group mapping information.

Syntax

show ip pim rp-map

Modes

User EXEC mode

Command Output

The **show ip pim rp-map** command displays the following information:

Output Field	Description
Group address	Indicates the PIM Sparse multicast group address using the listed RP.
RP address	Indicates the IP address of the RP for the listed PIM Sparse group.

Examples

The following example shows RP-to-group mapping.

```
device> show ip pim rp-map

Number of group-to-RP mappings: 6
Group address        RP address
------------------------------
1 239.255.163.1  99.99.99.5
2 239.255.163.2  99.99.99.5
3 239.255.163.3  99.99.99.5
4 239.255.162.1  99.99.99.5
5 239.255.162.2  43.43.43.1
6 239.255.162.3  99.99.99.5
```

show ip pim rp-set

Displays rendezvous-point (RP)-set list for the device elected as the bootstrap router (BSR).

Syntax

show ip pim rp-set

Modes

User EXEC mode

Command Output

The **show ip pim rp-set** command displays the following information:

Output Field	Description
Number of group prefixes	The number of PIM Sparse group prefixes for which the RP is responsible.
Group prefix	Indicates the multicast groups for which the RP listed by the previous field is a candidate RP.
RPs expected or received	Indicates how many RPs were expected and received in the latest bootstrap message.
RP *num*	Indicates the RP number. If there are multiple RPs in the PIM Sparse domain, a line of information for each RP is listed, in ascending numerical order.
priority	The RP priority of the candidate RP. During the election process, the candidate RP with the highest priority is elected as the RP.
age	The age (in seconds) of this RP-set.
holdtime	Indicates the time in seconds for which this rp-set information is valid. If this rp-set information is not received from BSR within the holdtime period, the rp-set information is aged out and deleted.

Examples

The following example shows the RP set list for the device elected as BSR.

```
device> show ip pim rp-set
Static RP
---------
Static RP count: 2
1.51.51.4
1.51.51.5
Number of group prefixes Learnt from BSR: 1
Group prefix = 224.0.0.0/4      # RPs: 2
      RP 1: 1.51.51.1    priority=0    age=60    holdtime=150
      RP 2: 1.51.51.3    priority=0    age=30    holdtime=150
```

The following example shows the RP set list for devices that are not elected as BSR.

```
device> show ip pim rp-set
Static RP
---------
Static RP count: 2
1.51.51.4
1.51.51.5
Number of group prefixes Learnt from BSR: 1
Group prefix = 224.0.0.0/4      # RPs expected: 2
      # RPs received: 2
      RP 1: 1.51.51.1    priority=0    age=60    holdtime=150
      RP 2: 1.51.51.3    priority=0    age=30    holdtime=150
```

show ip pim rpf

Displays what PIM sees as the best reverse path to the source. While there may be multiple routes back to the source, the one displayed by this command is the one that PIM thinks is best.

Syntax

show ip pim rpf *ip-address* [*group-address*]

Parameters

ip-address

Specifies the source address for reverse-path forwarding (RPF) check.

group-address

Specifies the group address for reverse-path forwarding (RPF) check.

Modes

User EXEC mode

Examples

The following example shows the best reverse path to the specified source.

```
device# show ip pim vrf eng rpf 130.50.11.10
Source 130.50.11.10 directly connected on e1/4/1
```

show ip pim sparse

Displays Protocol Independent Multicast (PIM) Sparse configuration information, including whether hardware-drop is enabled, and information for PIM Source-Specific Multicast (SSM) range and access control list (ACL) configuration.

Syntax

show ip pim sparse

Modes

User EXEC mode

Command Output

The **show ip pim sparse** command displays the following information:

Output Field	Description
Maximum mcache	Maximum number of multicast cache entries.
Current Count	Number of multicast cache entries used.
Hello interval	How often the device sends PIM Sparse hello messages to its PIM Sparse neighbors. This field shows the number of seconds between hello messages. PIM Sparse routers use hello messages to discover one another.
Neighbor timeout	Number of seconds the device waits for a hello message from a neighbor before determining that the neighbor is no longer present and is not removing cached PIM Sparse forwarding entries for the neighbor. The default is 105 seconds.
Join/Prune interval	How frequently the device sends PIM Sparse Join or Prune messages for the multicast groups it is forwarding. This field shows the number of seconds between Join or Prune messages. The device sends Join or Prune messages on behalf of multicast receivers that want to join or leave a PIM Sparse group. When forwarding packets from PIM Sparse sources, the device sends the packets only on the interfaces on which it has received join requests in Join or Prune messages for the source group.
Inactivity interval	Number of seconds a forwarding entry can remain unused before the router deletes it. The default is 180 seconds.
Hardware Drop Enabled	Indicates whether hardware-drop is enabled or disabled. To prevent unwanted multicast traffic from being sent to the CPU, PIM Routing and Passive Multicast Route Insertion (PMRI) can be used together to ensure that multicast streams are only forwarded out ports with interested receivers and unwanted traffic is dropped in the hardware on Layer 3 switches.
Prune Wait Interval	Number of seconds a PIM device waits before stopping traffic to neighbor devices that do not want the traffic. The range is 0 to 3 seconds. The default is 3 seconds.

Output Field	Description
Bootstrap Msg interval	How frequently the BSR configured on the device sends the RP set to the RPs within the PIM Sparse domain in seconds. The RP set is a list of candidate RPs and their group prefixes. The group prefix of a candidate RP indicates the range of PIM Sparse group numbers for which it can be an RP. **NOTE** This field contains a value only if an interface on the device is elected to be the BSR. Otherwise, the field is blank.
Candidate-RP Msg interval	Number of seconds the candidate RP configured on the Layer 3 switch sends candidate RP advertisement messages to the BSR. The default is 60 seconds.
Register Suppress Time	The mean interval between receiving a Register-Stop and allowing registers to be sent again. A lower value means more frequent register bursts at the RP, while a higher value means longer join latency for new receivers. The default is 60 seconds.
Register Probe Time	Number of seconds the PIM router waits for a Register-Stop from an RP before it generates another NULL register to the PIM RP. The default is 10 seconds.
Register Stop Delay	How often a Register-Stop message is displayed.
Join/Prune Policy	Join and Prune policy configurations.
Register Suppress interval	Number of seconds that it takes the designated router to send Register-encapsulated data to the RP after receiving a Register-Stop message. The default is 60 seconds.
SSM Enabled	If yes, Source-Specific Multicast (SMM) is configured globally on this router.
SPT threshold	Number of packets the device sends using the path through the RP before switching to the SPT path. The default is 1 packet.
SSM Group Range	Source-Specific Multicast (SSM) group range.
Route Precedence	The route precedence configured to control the selection of routes based on the four route types: • Non-default route from the mRTM • Default route from the mRTM • Non-default route from the uRTM • Default route from the uRTM
Slow Path Disable All	Whether disabling of slow path forwarding of all multicast data packets is enabled.
Slow Path Enable SSM	Whether slow path forwarding for SSM groups is enabled.
Slow Path Filter Acl	The number of slow path forwarding of IP multicast data packets for groups in an access control list (ACL).

Examples

The following example displays PIM Sparse configuration information, including information about slow path forwarding configurations.

```
device> show ip pim sparse

Global PIM Sparse Mode Settings
  Maximum Mcache          : 16384       Current Count              : 3
  Hello interval          : 30          Neighbor timeout           : 105
  Join/Prune interval     : 60          Inactivity interval        : 180
  Hardware Drop Enabled   : Yes         Prune Wait Interval        : 3
  Bootstrap Msg interval  : 60          Candidate-RP Msg interval  : 60
  Register Suppress Time  : 60          Register Probe Time        : 10
  Register Stop Delay     : 10
  SSM Enabled             : Yes         SPT Threshold              : 1
  SSM Group Range         : 232.0.0.0/8
  Route Precedence        : uc-non-default uc-default mc-non-default mc-default
  Slow Path Disable All   : Yes
  Slow Path Enable SSM    : Yes
  Slow Path Filter Acl    : acl
```

The following example displays PIM Sparse configuration information, including information about the register rate limitations and the register message filter rule.

```
device> show ip pim sparse
Global PIM Sparse Mode Settings
Maximum Mcache             : 2048            Current Count                : 0
Hello interval             : 30              Neighbor timeout             : 105
Join/Prune interval        : 60              Inactivity interval          : 180
Hardware Drop Enabled      : Yes              Prune Wait Interval         : 3
Bootstrap Msg interval     : 60               Candidate-RP Msg interval   : 60
Register Suppress Time     : 60               Register Probe Time         : 10
Register Stop Delay        : 10               SPT Threshold               : 1
SSM Enabled                : No
Route Precedence           : uc-non-default uc-default mc-non-default mc-default
Embedded RP Enabled        : Yes
Slow Path Disable All      : No              Slow Path Enable SSM         : No
Slow Path Filter Acl       : None
Register Rate Limit        : 20 pps        Register Filter                :  pim_reg_filter
```

History

Release version	Command history
08.0.95	The output for this command was enhanced to include information about slow path forwarding configurations.
09.0.10	The output for this command was enhanced to include information about Join and Prune configurations and the register rate limitations.

show ip pim traffic

Displays IPv4 PIM traffic statistics.

Syntax

show ip pim traffic [**join-prune**] [**rx** | **tx**]

Parameters

join-prune

Specifies displaying join and prune statistics.

rx

Specifies displaying received PIM traffic statistics.

tx

Specifies displaying transmitted PIM traffic statistics.

Modes

Privileged EXEC mode

Usage Guidelines

PIM control packet statistics for interfaces that are configured for standard PIM are listed first by the display.

Command Output

The **show ip pim traffic** command displays the following information:

Output Field	Description
Port	The port or virtual interface on which the PIM interface is configured.
HELLO	The number of PIM Hello messages sent or received on the interface.
JOIN-PRUNE	The number of Join or Prune messages sent or received on the interface. **NOTE** Unlike PIM Dense, PIM Sparse uses the same messages for Joins and Prunes.
ASSERT	The number of Assert messages sent or received on the interface.
REGISTER GRAFT (DM)	The number of Register messages sent or received on the interface.
REGISTER STOP (SM)	The number of Register Stop messages sent or received on the interface.
BOOTSTRAP MSGS (SM)	The number of bootstrap messages sent or received on the interface.
CAND. RP ADV. (SM)	The total number of Candidate-RP-Advertisement messages sent or received on the interface.
Err	The total number of messages discarded, including a separate counter for those that failed the checksum comparison.

Examples

The following example shows PIM join and prune traffic statistics for received and sent packets.

```
device> show ip pim traffic
Port    HELLO     JOIN-PRUNE  ASSERT    REGISTER  REGISTER  BOOTSTRAP CAND. RP  Err
                                        GRAFT(DM) STOP(SM)  MSGS (SM) ADV. (SM)
-------+---------+-----------+---------+---------+---------+---------+---------+---
       Rx        Rx          Rx        Rx        Rx        Rx        Rx        Rx
------+---------+-----------+---------+---------+---------+---------+---------+---
v30     0         0           0         0         0         0         0         0
v50     2526      1260        0         0         0         1263      0         0
v150    2531      0           0         0         0         1263      0         0
v200    2531      0           0         0         0         1         0         0
Port    HELLO     JOIN-PRUNE  ASSERT    REGISTER  REGISTER  BOOTSTRAP CAND. RP  Err
                                        GRAFT(DM) STOP(SM)  MSGS (SM) ADV. (SM)
-------+---------+-----------+---------+---------+---------+---------+---------+---
       Tx        Tx          Tx        Tx        Tx        Tx        Tx
------+---------+-----------+---------+---------+---------+---------+---------+---
v30     2528      0           0         0         0         0         0
v50     2540      1263        0         0         0         2         0
v150    2529      0           0         0         0         1262      0
v200    2529      0           0         0         0         1262      0
```

The following example shows the number of received IPv4 PIM Hello packets dropped on interface 1/1/9 because an ACL to control neighbor access is configured on it.

```
device> show ip pim traffic rx

Port    HLO   JN-PRNE  ASSERT REG       REG        BTSTRP     CAND RP   Err
                        GRFT(DM) STOP(SM)  MSGS(SM)   ADV.(SM)

-------+-------+------+-----+-------+----------+---------+---------+---
        Rx      Rx     Rx    Rx      Rx         Rx        Rx         Rx
-------+-------+------+-----+-------+----------+---------+---------+---
e1/1/1  0       0      0     0       0          0         0          0
e1/1/9  764     0      0     0       0          0         0          757
e1/1/12 0       0      0     0       0          0         0          0
v20     758     0      0     1916    0          0         0          0
v60     0       0      0     0       0          0         0          0
v310    0       0      0     0       0          0         0          0
v360    0       0      0     0       0          0         0          0
```

The following example shows PIM join and prune traffic statistics for sent packets.

```
device> show ip pim traffic tx

Port    HELLO     JOIN-PRUNE  ASSERT    REGISTER  REGISTER  BOOTSTRAP CAND. RP  Err
                                        GRAFT(DM) STOP(SM)  MSGS (SM) ADV. (SM)
-------+---------+-----------+---------+---------+---------+---------+---------+---
       Tx        Tx          Tx        Tx        Tx        Tx        Tx
------+---------+-----------+---------+---------+---------+---------+---------+---
v30     2528      0           0         0         0         0         0
v50     2540      1263        0         0         0         2         0
v150    2529      0           0         0         0         1262      0
v200    2530      0           0         0         0         1262      0
```

The following example shows PIM join and prune traffic statistics.

```
device> show ip pim traffic join-prune

Port  Packet    Join      Prune     Avg Aggr  Last Aggr
-----+---------+---------+---------+---------+----------
      Rx        Rx        Rx        Rx        Rx
-----+---------+---------+---------+---------+----------
v30   0         0         0         0         0
v50   1260      1260      0         1         1
v150  0         0         0         0         0
v200  0         0         0         0         0
Port  Packet    Join      Prune     Avg Aggr  Last Aggr
-----+---------+---------+---------+---------+----------
      Tx        Tx        Tx        Tx        Tx
-----+---------+---------+---------+---------+----------
v30   0         0         0         0         0
v50   1263      1262      1         1         1
v150  0         0         0         0         0
v200  0         0         0         0         0
```

The following example shows PIM join and prune traffic statistics.

```
device> show ip pim traffic join-prune rx

Port  Packet    Join      Prune     Avg Aggr  Last Aggr
-----+---------+---------+---------+---------+----------
      Rx        Rx        Rx        Rx        Rx
-----+---------+---------+---------+---------+----------
v30   0         0         0         0         0
v50   1260      1260      0         1         1
v150  0         0         0         0         0
v200  0         0         0         0         0
```

The following example shows PIM join and prune traffic statistics.

```
device> show ip pim traffic join-prune tx

Port  Packet    Join      Prune     Avg Aggr  Last Aggr
-----+---------+---------+---------+---------+----------
      Tx        Tx        Tx        Tx        Tx
-----+---------+---------+---------+---------+----------
v30   0         0         0         0         0
v50   1264      1263      1         1         1
v150  0         0         0         0         0
v200  0         0         0         0         0
```

History

Release version	Command history
08.0.20a	This command was modified to display, in the Err column, received Hello packets dropped on an interface because of an ACL to control neighbor access.

show ip pim vrf

Displays Protocol Independent Multicast (PIM) information for a virtual routing and forwarding (VRF) instance.

Syntax

show ip pim vrf *vrf-name* [**anycast-rp** | **bsr** | **counter nsr** | **counter tbp** | **dense** | **error** | **flow-count** | **group** | **hw-resource** | **nsr** | **optimization** [**dit-idx** *value* | **vlan-fid** *value*] | **prune** | **resource** | **rp-candidate** | **rpf** *ip-address* [*group-address*] | **rp-hash** *group-address* | **rp-map** | **rp-set** | **sparse** | **traffic** [**join-prune**] [**rx** | **tx**]]

show ip pim vrf *vrf-name* **interface** [**ethernet** *unit/slot/port* | **lag** *number* | **loopback** *loopback-number* | **tunnel** *number* | **ve** *ve-number*]

show ip pim vrf *vrf-name* **mcache** [*source-address* [*group-address*] | *group-address* | **counts** | **dense** | **dit-idx** *dit-idx* | **g_entries** | **receiver** { **ethernet** *unit/slot/port* | **lag** *number* | **vlan** *vlan-id* } | **sg_entries** | **sparse** | **ssm**]

show ip pim vrf *vrf-name* **mcache counts** [*source-address* [*group-address*] | *group-address* | **dense** | **dit-idx** *dit-idx* | **g_entries** | **receiver** { **ethernet** *unit/slot/port* | **lag** *number* | **vlan** *vlan-id* } | **sg_entries** | **sparse** | **ssm**]

show ip pim vrf *vrf-name* **neighbor** [**ethernet** *unit/slot/port* | **lag** *number* | **tunnel** *number* | **ve** *ve-number*]

Parameters

vrf-name
Specifies a VRF instance.

anycast-rp
Specifies information for an IPv4 PIM Anycast rendezvous point (RP) interface.

bsr
Specifies bootstrap router (BSR) information.

counter nsr
Specifies multicast nonstop routing (NSR) counter and statistics information.

counter tbp
Specifiesmulticast Traverse by Parts (TBP) statistics .

dense
Specifies PIM Dense configuration information.

error
Specifies PIM errors.

flow-count
Specifies flowcache counters.

group
SpecifiesPIM group information.

hw-resource
Specifies usage and fail-count information for SG entries.

nsr
Specifies the multicast nonstop routing (NSR) status information.

optimization
Specifies PIM optimization information.

dit-idx *value*
Represents the IPMC index.

vlan-fid *value*
Represents the software VLAN index that stores the Layer 2 OIF sets.

prune
Specifies all multicast cache entries that are currently in a pruned state and have not yet aged out.

resource
Specifies the hardware resource information, such as hardware allocation, availability, and limit, for software data structures.

rp-candidate
Specifies candidate rendezvous point (RP) information.

rpf
Specifies what PIM sees as the best reverse path to the source. While there may be multiple routes back to the source, the one displayed by this command is the one that PIM thinks is best.

rp-hash *group-address*
Specifies rendezvous-point (RP) information for a PIM Sparse group.

rp-map
Specifies rendezvous-point (RP)-to-group mapping information.

rp-set
Specifies rendezvous-point (RP)-set list for the device elected as the bootstrap router (BSR).

sparse
Specifies PIM Sparse configuration information, including whether the hardware-drop feature is enabled or disabled, and information for PIM SSM range ACL configuration.

traffic
Specifies IPv4 PIM traffic statistics.

join-prune
Specifies displaying join and prune statistics.

rx
Specifies received PIM traffic statistics.

tx
Specifies transmitted PIM traffic statistics.

interface
Specifies an interface.

lag *number*
Specifies a LAG interface.

loopback *loopback-number*
Specifies a loopback interface.

tunnel *number*
Specifies a GRE tunnel.

ve *ve-number*
Specifies a virtual interface.

mcache
Specifies the PIM multicast cache.

source-address
Specifies the multicast cache source address.

group-address
Specifies the multicast cache group address.

counts
Specifies the number of entries.

dense
Specifies displaying only the PIM Dense Mode entries.

dit-idx *dit-idx*
Specifies displaying all entries that match a specified downstream interface (DIT).

g_entries
Specifies displaying only the (*, G) entries.

receiver
Specifies displaying all entries that egress a specified interface.

sg_entries
Specifies displaying only the (S, G) entries.

sparse
Specifies displaying only the PIM Sparse Mode entries.

ssm
Specifies displaying only the SSM entries.

neighbor
Specifies an IP PIM neighbor.

Modes

User EXEC mode

Examples

The following example displays PIM Sparse configuration for a VRF instance named my_vrf.

```
device> show ip pim my_vrf sparse

Global PIM Sparse Mode Settings
  Maximum Mcache         : 12992       Current Count              : 0
  Hello interval         : 30          Neighbor timeout           : 105
  Join/Prune interval    : 60          Inactivity interval        : 180
  Hardware Drop Enabled  : Yes         Prune Wait Interval        : 3
  Bootstrap Msg interval : 60          Candidate-RP Msg interval  : 60
  Register Suppress Time : 60          Register Probe Time        : 10
  Register Stop Delay    : 10          Register Suppress interval : 60
  SSM Enabled            : Yes         SPT Threshold              : 1
  SSM Group Range        : 232.0.0.0/8
  Route Precedence       : mc-non-default mc-default uc-non-default uc-default
```

show ip pimsm-snooping cache

Displays the downstream PIM join/prune information for both source-path tree (SPT) and rendezvous-point tree (RPT).

Syntax

show ip pimsm-snooping cache [**vlan** *vlan-id*] *ip-address* [**resources**]

Parameters

ip-address

Specifies the IP address.

vlan *vlan-id*

Specifies snooping for a VLAN.

resources

Specifies PIM SM snooping resources.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **show ip pimsm-snooping cache** command to check and verify the outgoing interfaces (OIF)s added by pimsm-snooping module.

Command Output

The **show ip pimsm-snooping cache** command displays the following information:

Output field	Description
SG	(s,g) downstream fsm state for SPT.
G	(*,g) downstream fsm state for RPT

The **show ip pimsm-snooping cache** command displays the following information only when multi-chassis trunking (MCT) is enabled on the VLAN:

Output field	Description
CCEP	Cluster client edge port
CEP	Cluster edge port
Remote/Local	Join/Prune received on MCT peer or local

Examples

```
Device1#show ip pimsm-snooping cache
 OIF Info:
 TR - OIF Belongs to Trunk/LAG, Primary port is displayed
 SG - (s,g) downstream fsm state:
 G - (*,g) downstream fsm state:
     NI : No Info, J : Join, PP : Prune Pending, CLEAN : cleanup in progress
 RPT - (s,g,rpt) downstream fsm state:
     NI : No Info, P : Pruned, PP : Prune Pending, Px : Temp step in (*,G)
     join processing, PPx : Temp State in (*,G) processing, CLEAN : cleanup
     in progress.

PIMSM Snoop cache for vlan 700, has 20 cache
1       (* 226.0.0.1) Up Time: 00:47:05
         OIF: 1
         e1/1/6 G : J(173) ET: 210, Up Time: 00:47:05 , CEP, Local

2       (80.1.1.9 226.0.0.1) Up Time: 00:47:04
         OIF: 1
         e1/1/6 SG : J(178) ET: 210, Up Time: 00:47:04 , CEP, Local
.....
.....
<output turncated>
...
...
9       (* 226.0.0.9) Up Time: 00:50:11
         OIF: 1
         e1/1/6 G : J(162) ET: 210, Up Time: 00:50:11 , CEP, Local

10      (* 226.0.0.10) Up Time: 00:50:11
         OIF: 1
         e1/1/6 G : J(167) ET: 210, Up Time: 00:50:11 , CEP, Local
```

The following example filters out sg-entries.

```
Device2#show ip pimsm-snooping cache sg-entries
 OIF Info:
 TR - OIF Belongs to Trunk/LAG, Primary port is displayed
 SG - (s,g) downstream fsm state:
 G - (*,g) downstream fsm state:
     NI : No Info, J : Join, PP : Prune Pending, CLEAN : cleanup in progress
 RPT - (s,g,rpt) downstream fsm state:
     NI : No Info, P : Pruned, PP : Prune Pending, Px : Temp step in (*,G)
     join processing, PPx : Temp State in (*,G) processing, CLEAN : cleanup
     in progress.

PIMSM Snoop cache for vlan 700, has 20 cache
1       (80.1.1.9 226.0.0.1) Up Time: 00:50:20
         OIF: 1
         e1/1/6 SG : J(162) ET: 210, Up Time: 00:50:20 , CEP, Local

2       (80.1.1.9 226.0.0.2) Up Time: 00:50:18
         OIF: 1
         e1/1/6 SG : J(161) ET: 210, Up Time: 00:50:18 , CEP, Local
....
....
<output truncated>
....
....
9       (80.1.1.9 226.0.0.9) Up Time: 00:50:19
         OIF: 1
         e1/1/6 SG : J(158) ET: 210, Up Time: 00:50:19 , CEP, Local

10      (80.1.1.9 226.0.0.10) Up Time: 00:50:19
         OIF: 1
         e1/1/6 SG : J(157) ET: 210, Up Time: 00:50:19 , CEP, Local
```

The following example filters out g-entries.

```
Device#show ipv6 pimsm-snooping cache g-entries
 OIF Info:
 TR - OIF Belongs to Trunk/LAG, Primary port is displayed
 SG - (s,g) downstream fsm state:
 G - (*,g) downstream fsm state:
     NI : No Info, J : Join, PP : Prune Pending, CLEAN : cleanup in progress
 RPT - (s,g,rpt) downstream fsm state:
     NI : No Info, P : Pruned, PP : Prune Pending, Px : Temp step in (*,G)
     join processing, PPx : Temp State in (*,G) processing, CLEAN : cleanup
     in progress.

PIMSM Snoop cache for vlan 700, has 20 cache
1      (* ff1e::6:1) Up Time: 00:57:33
        OIF: 1
        e1/1/6 G : J(175) ET: 210, Up Time: 00:57:33 , CEP, Local

2      (* ff1e::6:2) Up Time: 00:57:09
        OIF: 1
        e1/1/6 G : J(178) ET: 210, Up Time: 00:57:09 , CEP, Local
....
....
<output truncated>
....
....
9      (* ff1e::6:9) Up Time: 00:57:08
        OIF: 1
        e1/1/6 G : J(168) ET: 210, Up Time: 00:57:08 , CEP, Local

10     (* ff1e::6:a) Up Time: 00:57:35
        OIF: 1
        e1/1/6 G : J(169) ET: 210, Up Time: 00:57:35 , CEP, Local
```

show ip reverse-path-check

Displays the global unicast Reverse Path Forwarding settings.

Syntax

show ip reverse-path-check

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to display the global Unicast Reverse Path Forward settings, which includes the CLI configuration and current state of the Global Unicast Reverse Path Forward settings.

Command Output

The **show ip reverse-path-check** command displays the following information.

Output field	Description
CLI config	The command line configured on the device after device bootup.
Current state	The mode set during device bootup. This takes effect only after reload.

Examples

The following example shows the uRPF settings on an ICX device.

```
device# show ip reverse-path-check
Global uRPF Settings:
CLI config : Enabled
Current State : Enabled
```

History

Release version	Command history
08.0.30	This command was introduced.
08.0.40	Removed show output for the ICX 6610 device.

show ip reverse-path-check interface

Displays unicast Reverse Path Forwarding settings at the interface level on ICX devices.

Syntax

show ip reverse-path-check interface

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to display the interface level unicast Reverse Path Forward settings such as the uRPF mode and whether uRPF excludes the default route for uRPF source IP lookup. Use the **show ip interface ethernet** command to view details about the interface level RPF mode configuration.

Command Output

The **show ip reverse-path-check interface** command displays the following information.

Output field	Description
Interface	The interface number.
uRPF mode	The uRPF mode enabled.
uRPF exclude default	Yes specifies that the exclude default option is enabled, while No specifies that the exclude default option is not enabled on the interface.

Examples

The following example shows the interface level uRPF settings on ICX devices.

```
device# show ip reverse-path-check interface
-----------------------------------------------------------------------
 Interface           uRPF mode               uRPF Exclude default
-----------------------------------------------------------------------
 Eth 1/1/11          Strict                     No
```

History

Release version	Command history
08.0.30	This command was introduced.

show ip rip

Displays RIP filters.

Syntax

show ip rip

Modes

Privileged-EXEC mode

Command Output

The **show ip rip** command displays the following information:

Output field	Description
RIP Summary area	Shows the current configuration of RIP on the device.
Static metric	Shows the static metric configuration. "Not defined" means the route map has not been distributed.
OSPF metric	Shows what OSPF route map has been applied.
Neighbor Filter Table area	
Index	The filter number. You assign this number when you configure the filter.
Action	The action the device takes for RIP route packets to or from the specified neighbor:
	deny - If the filter is applied to an interface's outbound filter group, the filter prevents the device from advertising RIP routes to the specified neighbor on that interface. If the filter is applied to an interface's inbound filter group, the filter prevents the device from receiving RIP updates from the specified neighbor.
	permit - If the filter is applied to an interface's outbound filter group, the filter allows the device to advertise RIP routes to the specified neighbor on that interface. If the filter is applied to an interface's inbound filter group, the filter allows the device to receive RIP updates from the specified neighbor.
Neighbor IP Address	The IP address of the RIP neighbor.

Examples

The following example shows the current configuration of RIP on a device with a neighbor filter table configured to deny routes from source IP address 10.11.222.25.

```
device# show ip rip
RIP Summary
Default port 520
Administrative distance is 120
Updates every 30 seconds, expire after 180
Holddown lasts 180 seconds, garbage collect after 120
Last broadcast 29, Next Update 27
Need trigger update 0, Next trigger broadcast 1
Minimum update interval 25, Max update Offset 5
Split horizon is on; poison reverse is off
Import metric 1
Prefix List, Inbound : block_223
Prefix List, Outbound : block_223
Route-map, Inbound : Not set
Route-map, Outbound : Not set
Redistribute: CONNECTED Metric : 0 Routemap : Not Set

RIP Neighbor Filter Table
  Index   Action   Neighbor IP Address
    1     deny     10.11.222.55
    5     permit   any
```

show ip rip interface

Displays RIP filters for a specific interface.

Syntax

show ip rip interface [**ethernet** *unit/slot/port* | **lag** *number* | **ve** *number*]

Parameters

ethernet *unit / slot / port*

Designates an Ethernet interface for which RIP filters are displayed.

lag *number*

Designates the LAG for which RIP filters are displayed.

ve *number*

Designates a virtual Ethernet interface for which RIP filters are displayed.

Modes

Privileged EXEC mode

Command Output

The **show ip rip interface** command displays the following information:

Output field	Description
RIP mode: Version x	Specifies RIP version 1, version 2, or version 1-2 compatible.
Running: True/False	Indicates whether RIP protocol is active on the interface.
Route summarization	Indicates whether route summarization is enabled or disabled.
Split horizon is on/off; poison reverse is on/off	Indicates whether split horizon or poison reverse is enabled.
Default routes	Indicates whether default routes are accepted or not.
Metric-offset, Inbound	Indicates whether a value has been added to the metric for incoming (learned) routes.
Metric-offset, Outbound	Indicates whether a value has been added to the metric for outgoing (advertised) routes.
Prefix List, Inbound	Indicates whether a prefix list is applied to incoming routes.
Prefix List, Outbound	Indicates whether a prefix list is applied to outgoing routes.
Route-map, Inbound	Indicates whether a route-map is applied to incoming routes.
Route-map, Outbound	Indicates whether a route-map is applied to outgoing routes.
RIP Sent/Receive packet statistics	Provides number of requests and responses sent or received.
RIP Error packet statistics	Provides number of error packets by category: Rejected, Version, Response format, Address family, Metric, or Request format.

Examples

The following sample output shows that Ethernet interface 1/1/1 is running RIP Version 2 without prefix lists or route-maps and is adding 1 to the metric for learned RIP routes.

```
device# show ip rip interface ethernet 1/1/1
Interface e 1/1/1
RIP Mode : Version2 Running: TRUE
Route summarization disabled
Split horizon is on; poison reverse is off
Default routes not accepted
Metric-offset, Inbound 1
Metric-offset, Outbound 0
Prefix List, Inbound : Not set
Prefix List, Outbound : Not set
Route-map, Inbound : Not set
Route-map, Outbound : Not set
RIP Sent/Receive packet statistics:
Sent : Request 2 Response 34047
Received : Total 123473 Request 1 Response 123472 UnRecognised 0
RIP Error packet statistics:
Rejected 0 Version 0 RespFormat 0 AddrFamily 0
Metric 0 ReqFormat 0
```

show ip rip route

Displays RIP route information for a device or a specific interface.

Syntax

show ip rip route [*ip-address* | *ip-address / L*]

Parameters

ip-address

Specifies the IP address, in the format A.B.C.D, for which RIP routes are displayed.

ip-address / L

Specifies the IP address prefix and mask, in the format A.B.C.D/L, where "L" is the mask length. Information is displayed for IP addresses matching the mask.

Modes

Privileged EXEC mode

Command Output

The **show ip rip route** command displays the following information:

Output field	Description
RIP Routing Table - nn entries	Indicates the number of routes in the device's routing table.
RIP route designation	Designates each route by CIDR designation, originating IP address, and interface.
RIP route settings	For each designated route, indicates protocol, metric setting, tag, and non-default timer settings.

Examples

The following example shows RIP route information for the device.

```
device# show ip rip route
RIP Routing Table - 474 entries:
1.1.1.1/32, from 169.254.30.1, e 1/1/23 (820)
RIP, metric 4, tag 0, timers: aging 13
1.1.2.1/32, from 169.254.50.1, e 1/3/1 (482)
RIP, metric 3, tag 0, timers: aging 42
1.1.6.1/32, from 169.254.100.1, ve 101 (413)
RIP, metric 2, tag 0, timers: aging 42
169.254.40.0/24, from 192.168.1.2, e 1/1/1 (1894)
RIP, metric 3, tag 0, timers: aging 14
169.254.50.0/24, from 192.168.1.2, e 1/1/1 (1895)
RIP, metric 4, tag 0, timers: aging 14
169.254.100.0/24, from 192.168.1.2, e 1/1/1 (2040)
RIP, metric 2, tag 0, timers: aging 14
169.254.101.0/30, from 192.168.1.2, e 1/1/1 (2105)
223.229.32.0/31, from 169.254.50.1, e 1/3/1 (818)
RIP, metric 2, tag 0, timers: aging 21
```

show ip route

Displays the IP route table information.

Syntax

show ip route [**vrf** *vrf-name*] [*ip-addr* | *num* | **bgp** | **direct** | **ospf** | **rip** | **static** | **summary**]

Parameters

vrf *vrf-name*
: Displays VRF routes.

ip-addr
: Displays information for the subnet mask.

num
: Displays route starting from index.

bgp
: Displays Border Gateway Protocol (BGP) routes.

direct
: Displays directly attached routes.

ospf
: Displays Open Shortest Path First (OSPF) routes.

rip
: Displays Routing Information Protocol (RIP) routes.

static
: Displays static IP routes.

summary
: Displays a summary of routes.

Modes

User EXEC mode

Command Output

The **show ip route** command displays the following information:

Output field	Description
Destination	The destination network of the route.
Cost	The cost of the route.

Output field	Description
Type	The route type, which can be one of the following entries: • B - The route is learned from BGP. • D - The destination is directly connected to this RUCKUS device. • R - The route is learned from RIP. • S - The route is a static route. • Sv - The route is an inter-VRF static route. • * - The route is a candidate default route. • O - The route is an OSPF route. Unless you use the OSPF option to display the route table, O is used for all OSPF routes. If you do not use the OSPF option, the following type codes are used: – O - OSPF intra-area route (within the same area). – IA - The route is an OSPF inter-area route (a route that passes from one area into another area). – E1 - The route is an OSPF external type 1 route. – E2 - The route is an OSPF external type 2 route.

Examples

The following example displays IP route information.

```
device# show ip route
Total number of IP routes: 4
Type Codes - B:BGP D:Connected O:OSPF R:RIP S:Static; Cost - Dist/Metric
BGP  Codes - i:iBGP e:eBGP
OSPF Codes - i:Inter Area 1:External Type 1 2:External Type 2
STATIC Codes - v:Inter-VRF
        Destination        Gateway         Port          Cost          Type Uptime
1       0.0.0.0/0          200.1.1.2       ve 200        1/1           S    0m3s
2       22.22.22.0/24      DIRECT          ve 200        1/1           S    11d13h
3       22.22.22.22/32     100.1.1.2       ve 100        1/1           Sv   0m3s
4       200.1.1.0/24       DIRECT          ve 200        0/0           D    11d13h
```

The following example displays summary information about IP routes.

```
device# show ip route summary
IP Routing Table - 4 entries:
  1 connected, 3 static, 0 RIP, 0 OSPF, 0 BGP
  Number of prefixes:
  /0: 1 /24: 2 /32: 1
Nexthop Table Entry - 3 entries
```

History

Release version	Command history
08.0.95	This command was modified to display the details of static inter-VRF routing.

show ip source-guard

Displays the learned IP addresses for IP Source Guard ports.

Syntax

show ip source-guard ethernet *stack-id/slot/port*

Parameters

ethernet *stack-id/slot/port*

Specifies the Ethernet interface.

Modes

User EXEC mode

Command Output

The **show ip source-guard** command displays the following information:

Output field	Description
Interface	Displays the interface number for source guard entries learned or configured statically.
Type	Displays the interface type - IP.
Filter mode	Displays the filter mode - active or inactive.
IP-address	The dynamically learned or statically configured address.
VLAN	Specifies the VLAN number.
Static	All the static source guard entries configured are populated as "Yes".

Examples

The following output displays the learned IP addresses for IP Source Guard ports.

```
device> show ip source-guard ethernet 1/1/48

Total number of IP Source Guard entries: 33
No     Interface           Type   Flter-mode      IP-address      Vlan   Static
--     ---------           ----   ----------      ----------      ----   -------
1      1/1/9*4/1/39         ip     active         15.15.15.127     1       Yes
2      1/1/9*4/1/39         ip     active         15.15.15.9       1       No
3      1/1/9*4/1/39         ip     active         15.15.15.10      1       No
4      1/1/9*4/1/39         ip     active         15.15.15.11      1       No
5      1/1/9*4/1/39         ip     active         15.15.15.12      1       No
6      1/1/9*4/1/39         ip     active         15.15.15.13      1       No
7      1/1/9*4/1/39         ip     active         15.15.15.14      1       No
8      1/1/9*4/1/39         ip     active         15.15.15.15      1       No
9      1/1/9*4/1/39         ip     active         15.15.15.16      1       No
10     1/1/9*4/1/39         ip     active         15.15.15.17      1       No
```

History

Release version	Command history
08.0.50	The output of this command was modified for static source guard entries.

show ip ssh

Displays Secure Shell (SSH) connection session details.

Syntax

show ip ssh [**config**]

Parameters

config

Displays the SSH configuration details.

Modes

User EXEC mode

Command Output

The **show ip ssh** command displays the following information:

Output field	Description
Inbound	Connections listed under this heading are inbound.
Outbound	Connections listed under this heading are outbound.
Connection	The SSH connection ID.
Version	The SSH version number.
Username	The username for the connection.
IP Address	The IP address of the SSH client.
SSH-v2.0 enabled	Indicates that SSHv2 is enabled.
hostkey	Indicates that at least one host key is on the device. It is followed by a list of the host key types and module sizes.

The **show ip ssh config** command displays the following information:

Output field	Description
SSH server	SSH server is enabled or disabled.
SSH port	SSH port number.
Host Key	Host key.
Encryption	The encryption used for the SSH connection. The following values are displayed when AES only is enabled: • AES-256, AES-192, and AES-128 indicate the different AES methods used for encryption. • 3-DES indicates 3-DES algorithm is used for encryption

Output field	Description
Authentication methods	The authentication methods used for SSH. The authentication can have one or more of the following values: • Password: Indicates that you are prompted for a password when attempting to log in to the device. • Public-key: Indicates that DSA or RSA challenge-response authentication is enabled. • Interactive: Indicates the interactive authentication is enabled.
Authentication retries	The number of authentication retries. This number can be from 1 through 5.
Login timeout (seconds)	SSH login timeout value in seconds. This can be from 0 through 120.
Strict management VRF	Strict management VRF is enabled or disabled.
SCP	SCP is enabled or disabled.
Client Rekey	The SSH rekey interval configured for the client, in minutes and maximum data.
Server Rekey	The SSH rekey interval configured for the server, in minutes and maximum data.

Examples

The following example displays sample output of the **show ip ssh** command.

```
device# show ip ssh
Connection  Version   Username  IP Address
Inbound:
1           SSH-2     Raymond   10.120.54.2
Outbound:
6           SSH-2     Steve     10.37.77.15
SSH-v2.0 enabled; hostkey:  RSA(2048)
```

The following example displays sample output of the **show ip ssh config** command.

```
device# show ip ssh config
SSH server                 : Disabled
SSH port                   : tcp\22
Host Key                   :
Encryption                 : aes256-cbc, aes192-cbc, aes128-cbc, aes256-ctr, aes
192-ctr, aes128-ctr, 3des-cbc
Permit empty password      : No
Authentication methods     : Password, Public-key, Interactive
Authentication retries     : 3
Login timeout (seconds)    : 120
Strict management VRF      : Disabled
SCP                        : Enabled
SSH Client Keys            : RSA(0)
Client Rekey               : 200 Minute, 0 KB
Server Rekey               : 250 Minute, 0 KB
```

History

Release version	Command history
08.0.70	This command was modified to add the **rekey statistics** option.
09.0.00	This command was modified to remove the **rekey statistics** keyword. The SSH IPv4 access-group and SSH IPv6 access-group fields were removed from the output for the **show ip ssh config** command. The Encryption, HMAC, and Server Hostkey fields were removed from the output for the **show ip ssh** command

show ip ssh sessions

Displays Secure Shell (SSH) connection and their status.

Syntax

show ip ssh sessions

Modes

User EXEC mode

Command Output

The **show ip ssh sessions** command displays the following information:

Output field	Description
Inbound	Connections listed under this heading are inbound.
Outbound	Connections listed under this heading are outbound.
Connection	The SSH connection ID.
Server IP Address	The IP address of the SSH server.

Examples

The following example displays sample output of the **show ip ssh sessions** command.

```
device# show ip ssh sessions
SSH server status: Enabled
SSH copy-received-cos status: Disabled
SSH connections:
SSH connections (inbound):
2       closed
3       closed
4       closed
5       closed
6       closed
7       closed
SSH connection (outbound):
8       established, server ip address 10.1.160.115, from Console session, privilege super-user
9      closed
10      closed
11      closed
12      closed
13      closed
14      closed
15      closed
16      closed
17      closed
18     closed
19     closed
```

History

Release version	Command history
08.0.90	This command was introduced.
09.0.00	This command was modified so that the server hostkey can no longer be RSA. The Idle timeout and Server Host-key fields were removed from the output.

show ip ssl

Displays SSL certificate details.

Syntax

show ip ssl [**certificate** | **client-certificate** | **device-certificate** | **profile**]

Parameters

certificate

Displays the SSL certificate details for self-signed certificates.

client-certificate

Displays SSL client certificate details.

device-certificate

Displays SSL details for TPM/non-TPM ICX device certificate.

profile

Displays SSL profile details.

Modes

Privileged EXEC mode

Global configuration mode

Examples

The following example shows SSL TLS protocol details.

```
device# show ip ssl
Session  Protocol Source IP               Source Port  Remote IP               Remote Port
Profile
1        TLS1_2   10.177.131.18           32952        10.177.131.216          2083
tls_profile
```

The following example displays user SSL profile and device SSL profile information.

```
device(config)# show ip ssl profile
SSL Profile Information:
*************************

Trustpoint Name    : DEVICE_TRUSTPNT
Remote Domain      : BTC3243M00J.switch-id.ruckuswireless.com
Signature Algorithm: sha256WithRSAEncryption

 Not Before: 2016 Feb 18 19:28:17
 Not After : 2036 Feb 18 19:28:17


Common Name        : RuckusRootCA
Organization       : Ruckus Wireless
Locality           : Sunnyvale
State              : California
Country            : US

Common Name        : RuckusRootCA
Organization       : Ruckus Wireless
Locality           : Sunnyvale
State              : California
Country            : US

-----BEGIN CERTIFICATE-----
MIIFszCCA5ugAwIBAgIIXNVhcWHHz5EwDQYJKoZIhvcNAQELBQAwZzEVMBMGA1UE
AwwMUnVja3VzUm9vdENBMRgwFgYDVQQKDA9SdWNrdXMgV2lyZWxlc3MxEjAQBgNV
BAcMCVN1bm55dmFsZTETMBEGA1UECAwKQ2FsaWZvcm5pYTELMAkGA1UEBhMCVVMw
HhcNMTYwMjE4MTkyODE3WhcNMzYwMjE4MTkyODE3WjBnMRUwEwYDVQQDDAxSdWNr
dXNSb290Q0ExGDAWBgNVBAoMD1J1Y2t1cyBXaXJlbGVzczESMBAGA1UEBwwJU3Vu
bnl2YWxlMRMwEQYDVQQIDApDYWxpZm9ybmlhMQswCQYDVQQGEwJVUzCCAiIwDQYJ
KoZIhvcNAQEBBQADggIPADCCAgoCggIBAMz6iReNwJmMZiobq2Cr39RW90vmso2f
ZEZ6HLFab8ih71L6+mzXoR8OMoQdVtmX5tRW5e/Nk0+6MHk2y1gDw/yIHGc3Ivc0
IHijTx0GFfP5zoKBcpUf9ccNNJnR+rgSWAFCWpDLJotRBf7Gg9smpKJ/Nvdkn8gE
5qnEOyCGwG8MEy6gjjAOckG0IC3h53pI7VekhKAxC4xrwUQD4EqLgVBisL8nCcAl
89ec8hZ78yGAxD/zNN51+UC+nzqP3jSNKe8Yzfv4teBpit/V5ueilw2x/R4Ys9GR
bdiYf8LtfVqDFuj/sLayTJXZNDZKXgnnvZBYP8WEb3fWWkcEknJi8CrtE1uYK1S1
Uo1OocYpJbwFOSZaBZTGal9744N6zXFEFChyYsVCW5Hn4xPfoZrFWWhx+nqhpsc3
HLte6yKG9u+YQWZdwItwaolj+6q6hTe3oleDyfxxgswh8oA7jERCBw8Gk01zL5yS
alx6ctnv417PTw9ZiDIfZqpYOu1rj8MoM9MMpqYjCSbMQthLJqvXfqC2iItt8TyP
I7XAeeR5+M3BqyvInMCz2cdZ464QXt2DyTS+WBB5SYsXD2sMAli7z9QhkIdCUVDR
6pW4G1ewAEFWcG+kzjJRWXDdCXmI4aGs769xvFh5S76+U5t6lC4O1yhZ7TJT9jvx
oQIJ9rjwPpV9AgMBAAGjYzBhMB0GA1UdDgQWBBQV2AsIvxliqdlVa33cp1HpD1Ti
eTAPBgNVHRMBAf8EBTADAQH/MB8GA1UdIwQYMBaAFBXYCwi/GWKp2VVrfdynUekP
VOJ5MA4GA1UdDwEB/wQEAwIBhjANBgkqhkiG9w0BAQsFAAOCAgEADdn/yh/+wNam
RAUG3v17IwC1uoAE5rSO9lc2k5cYIb+iT+HisYlQHRpqiZOhffRv2MZHR+YDuhL8
c/TcWbg4ElmjhgOZcE37kQysF8iHTGRmawGtGGPvjwLsP57t8Wnz3qAvRi2hdc/V
JwJB6FRBu9ESKdt1deQoZ0ccjE71wNWL1dwuovarFMPRLS/u7iLeTMGfIE200Pna
Ztjq2bsf33fVjL1pj10R1lLgStTDUSvL+IdjAaS2LO5PZowtPfTHaRgT7SDmmnWr
EC4SyNmP8PmAkBkHYWkVmgWj/VyDfnHcFEwa8dd5iQVMm+J+2J5oCkg3NZszjAoF
5RzOF+Vcp5FGiPUkNgCt7zg2MbvNLQIDJ8aAIS8GYKjnbZ4pezTw5K/y5f+qK5s/
ZmdOG8zMiCkP70lek3LJK7RSPfHEOEP2Ff89+LflDpW4U4gnUs+qIDaRiBk6NBm8
3FUk3np9agW3QhFgKLhctB2T5qWSfS83pRQFdiL0KcxllDAAHQULwl0i/3lPYwVJ
VvsH5BGYjKLz3MvyGxVUFh4SXKA4GEiELdwSb9PJXhHCQrJ1pHVq+D+PVdGwz2m8
feoGCwF3w3nJVrDGwLOzgm2f01aDHbJMlM1YcgW/ET6VbwjKus5eNlJh7YacbIqw
I7InlLanM0XvBvl6hDoEsV/zq7g/Cjo=
-----END CERTIFICATE-----
```

The following example displays SSL certificate details.

```
device(config)# show ip ssl certificate
Trusted Certificates:
 Dynamic:
 Index 0:
  Signature Algorithm: sha256WithRSAEncryption
  Issuer:
   CN: 10.25.105.201
  Validity:
   Not Before: 2014 Aug 22 05:12:45
   Not After : 2017 Aug 21 05:12:45
  Subject:
   CN: 10.25.105.201
  X509v3 extensions:
   X509v3 Subject Alternative Name:
    IP Address: 10.25.105.201
  Signature:
   12:ec:41:d8:01:45:61:ce:cf:7e:80:de:a6:7c:a7:2e:01:7f:
   42:27:22:1d:ac:a2:47:c5:0d:4f:e3:68:24:de:bf:50:40:65:
   25:8c:30:bd:ff:a7:d0:21:73:d2:ba:5e:67:42:1f:bb:97:4a:
   d9:1d:c3:ca:31:c4:59:10:79:d1:42:f4:b6:1a:b0:98:4e:a8:
   ef:e2:a2:98:c3:14:16:63:50:02:a0:18:9c:7a:e3:17:39:0d:
   b7:30:ab:23:9f:63:bd:0f:9e:d8:67:b0:fe:ec:3b:fa:4c:f4:
   3d:34:e2:99:0e:99:24:ec:93:fb:8a:e5:4a:bf:74:d6:ff:91:
   0a:dc:fb:b9:4f:91:5d:d4:f6:77:23:eb:ec:eb:3a:62:08:e1:
   a6:ea:a8:52:b6:39:62:db:29:fa:61:1d:fd:d5:02:31:04:73:
   50:ad:de:41:54:a5:e2:96:2d:9c:f4:68:b2:68:05:bb:39:47:
   ee:74:89:a2:8c:30:f0:f9:d7:d5:4b:3b:e2:95:6f:82:61:a3:
   c2:79:4c:f2:11:56:f8:2f:cc:fc:2b:4b:cb:3b:54:59:f0:8b:
   5b:70:e1:27:c3:57:25:eb:35:c6:07:ea:6d:0b:34:04:95:81:
   35:e6:64:c6:b8:72:e8:24:18:bd:ca:90:99:74:45:44:85:71:
   9e:7f:13:96:
```

History

Release version	Command history
08.0.70	This command changes the **certificate-client** parameter to **client-certificate**.
09.0.10a	The command added the device-certificate option.

show ip static mroute

Displays information for configured multicast routes.

Syntax

show ip static mroute [**vrf** *vrf-name*] *ip-subnet mask*]

Parameters

vrf *vrf-name*

Specifies an optional VRF route.

ip-subnet mask

Specifies an IP address and an optional address mask.

Modes

Privileged EXEC mode

Usage Guidelines

Only resolved and best static mroutes are added to the mRTM table. These routes are prefixed with an asterisk in the output from the **show ip static mroute** command.

Examples

The following example displays information for configured multicast routes:

```
Device(config)# show ip static mroute
IP Static Routing Table - 2 entries:
 IP Prefix          Next Hop        Interface  Dis/Metric/Tag  Name
*20.20.20.0/24      220.220.220.1   -          1/1/0
20.20.20.0/24       50.50.50.2      -          1/2/0
21.21.21.0/24       1.2.3.4         -          1/1/0
```

History

Release version	Command history
08.0.10a	This command was introduced.

show ip static route

Displays information about IPv4 static routes.

Syntax

show ip static route [*ip-address* | *ip-address/mask*] [**vrf** *vrf-name*]

Parameters

ip-address

Specifies an IP address.

ip-address/mask

Specifies an IP address and mask.

vrf *vrf-name*

Specifies a VRF.

Modes

User EXEC mode

Examples

The following is sample output from the **show ip static route** command.

```
device> show ip static route
IP Static Routing Table - 9 entries:
 IP Prefix          Next Hop        Interface  Dis/Metric/Tag  Name           Bfd-State
*1.1.1.0/24         50.50.50.1      -          1/1/0                          NA
*3.3.3.0/24         50.50.50.1      -          1/1/0                          NA
*10.177.0.0/16      10.177.112.1    -          1/1/0                          NA
 11.11.11.0/24      20.20.20.2      -          1/1/0                          NA
 20.0.0.0/24        10.0.0.1        -          1/1/0                          NA
 33.33.33.0/24      20.20.20.2      -          1/1/0                          NA
 40.40.40.0/24      20.20.20.2      -          1/1/0                          NA
 40.40.40.0/24      30.30.30.2      -          1/1/0                          NA
 50.50.50.0/24      20.20.20.2      -          1/1/0                          NA
 100.100.100.100/32 10.0.0.1        -          1/1/0                          NA
```

show ip tcp adjust-mss

Displays the number of TCP SYN/SYN-ACK packets trapped to CPU for MSS modification and number of packets in which MSS is actually modified.

Syntax

show ip tcp adjust-mss [**statistics**[**ethernet** *unit/slot/port* | **tunnel** *num* | **ve** *num* |**lag** *lag-id*]

Parameters

ethernet *unit slot port*

Displays the specified Ethernet interface by unit, slot, and port number.

tunnel *num*

Displays the tunnel interface number.

ve *num*

Displays the Virtual Ethernet interface number.

lag *lag-id*

Displays the lag number.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

LAG configuration mode

Command Output

The **show ip tcp adjust-mss statistics** command displays the following information:

Output field	Description
Interface	The type and the slot and port number of the interface.
Packets-Trapped	Number of packets TCP SYN/SYN-ACK trapped to CPU.
Packets Modified	Number of packets in which MSS is actually modified.

Examples

The following example displays information about all IP interfaces.

```
device# show ip tcp adjust-mss statistics

Interface    Packets-Trapped      Packets Modified
e 1/1/1            0                    0
e 1/1/2            0                    0
```

The following example displays the **show ip tcp adjust-mss** command .

```
device(config)#show ip tcp adjust-mss
Interface       Configured MSS-Adjust
e 2/1/22        1200
lag 1           1200
ve 100          1200
tunnel 1        1200
```

History

Release version	Command history
08.0.90	The command output was introduced.

show ip tcp connections

Displays general information about each TCP connection on the router, including the percentage of free memory for each of the internal TCP buffers.

Syntax

show ip tcp connections [**all-vrfs**] [*port-num* | *ip-address*]

Parameters

all-vrfs

Displays all VRFs for all TCP connections.

port-num

Displays the information for the specific TCP port number. Values are SSH:22 TELNET:23 HTTP:80 BGP:179 SSL:443 MSDP:639 LDP:646.

ip-address

Displays information for the specified IP address of the remote device.

Modes

User EXEC mode

Privileged EXEC mode

Global Configuration mode

Command Output

The **show ip tcp connections** command displays the following information:

Output field	Description
Local IP address:port	The IPv4 address and port number of the local router interface over which the TCP connection occurs.
Remote IP address:port	The IPv4 address and port number of the remote router interface over which the TCP connection occurs.

Output field	Description
TCP state	The state of the TCP connection. Possible states include the following: • LISTEN - Waiting for a connection request. • SYN-SENT - Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED - Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED - Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1 - Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2 - Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT - Waiting for a connection termination request from the local user. • CLOSING - Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK - Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT - Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED - There is no connection state.

Examples

The following output displays the sample output of the TCP connections.

```
device# show ip tcp connections
Total 10 TCP connections
   LISTEN: 7; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 3; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 0
Local IP address:port <-> Remote IP address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
0.0.0.0          22       0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          179      0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          443      0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          448      0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          6633     0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          8081     0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          8444     0.0.0.0          0      LISTEN       0       0       0       0
10.10.10.10      23       10.10.10.20      42066  ESTABLISHED  0       0       0       0
10.10.10.10      8253     10.10.10.20      179    ESTABLISHED  0       0       0       0
10.10.10.10      46408    10.10.10.20      23     ESTABLISHED  0       0       0       0
```

Release version	Command history
09.0.00	The command was modified to add the **all-vrfs** option. Memory usage percentages were also removed from the output.

show ip tcp traffic

Displays IP Transmission Control Protocol (TCP) traffic statistics.

Syntax

show ip tcp traffic

Modes

User EXEC mode

Command Output

The **show ip tcp traffic** command displays the following information:

Output field	Description
active opens	The number of TCP connections opened by this device by sending a TCP SYN to another device.
passive opens	The number of TCP connections opened by this device in response to connection requests (TCP SYNs) received from other devices.
failed attempts	This information is used by RUCKUS customer support.
active resets	The number of TCP connections this device reset by sending a TCP RESET message to the device at the other end of the connection.
passive resets	The number of TCP connections this device reset because the device at the other end of the connection sent a TCP RESET message.
input errors	This information is used by RUCKUS customer support.
in segments	The number of TCP segments received by the device.
out segments	The number of TCP segments sent by the device.
retransmission	The number of segments that this device retransmitted because the retransmission timer for the segment had expired before the device at the other end of the connection had acknowledged receipt of the segment.
in connections requests	The number of connection requests received by the device.
out connections requests	The number of connection requests sent by the device.
connections established	The total number of TCP connection established.
acks	The total number acknowledgments received.
duplicate acks	The total number of duplicate acknowledgments received.
duplicate bytes	The total number of TCP packets received with duplicate sequence number.
bad checksum	The total number of TCP packets received with bad checksum.
no checksum	The total number of TCP packets received with no checksum.
invalid header length	The total number of TCP packet received where the header length is less than the minimum header length.
illegal TCP MSS option length	The total number of TCP packets received with an illegal TCP MSS option length.
illegal option	The total number of TCP packets received with an illegal kind for TCP option.
minimum TCP header	The total number of TCP packets received with the length of the packet less than the minimum TCP header length requirement.
invalid segment	TCP invalid segments received.

Output field	Description
TCP-AO Validation failed Segments	Number of TCP segments that failed authentication
TCP-AO mismatch connections overall	Number of TCP connections where authentication send-ID and receive-ID did not match.

Examples

The following is sample output from the **show ip tcp traffic** command.

```
device# show ip tcp traffic
TCP Statistics
  4 current active tcbs, 8 tcbs allocated, 2 tcbs freed 0 tcbs protected
  3 active opens, 3 passive opens, 2 failed attempts
  130 active resets, 0 passive resets, 130 input errors
  138397 in segments, 138264 out segments, 9 retransmission
  3 in connections requests, 5 out connections requests, 4 connections established,
  138261 acks, 0  duplicate acks, 61 duplicate bytes
  0 bad checksum, 3 no checksum, 0 invalid header length
  0 illegal TCP MSS option length, 0 illegal option, 0 minimum TCP header, 0 invalid segment
  2 TCP-AO Validation failed Segments, 0 TCP-AO mismatch connections overall
```

History

Release version	Command history
08.0.95	The command output was enhanced to show more detailed information.
09.0.00	The command output was enhanced to show additional details on tcbs.
09.0.10	The command output was enhanced to show TCP keychain authentication options (AO).

show ip tcp vrf

Displays information on TCP connections for specified IPv4 VRFs

Syntax

show ip tcp vrf { *name* **connections** } [*ip-address*]

Parameters

{ *name* **connections** }

Specifies VRF for which information is displayed.

[*ip-address*]

Displays information for the specified IP address of the remote device.

Modes

User EXEC mode

Privileged EXEC mode

Global Configuration mode

Command Output

The **show ip tcp vrf** command displays the following information:

Output field	Description
Local IP address:port	The IPv4 address and port number of the local router interface over which the TCP connection occurs.
Remote IP address:port	The IPv4 address and port number of the remote router interface over which the TCP connection occurs.

Output field	Description
TCP state	The state of the TCP connection. Possible states include the following: • LISTEN - Waiting for a connection request. • SYN-SENT - Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED - Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED - Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1 - Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2 - Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT - Waiting for a connection termination request from the local user. • CLOSING - Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK - Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT - Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED - There is no connection state.

Examples

The following example displays information on IPv4 connections for the VRF named green.

```
device# show ip tcp vrf green connections
Total 7 TCP connections
   LISTEN: 5; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 1; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 1
Local IP address:port <-> Remote IP address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
0.0.0.0          22       0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          443      0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          448      0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          8081     0.0.0.0          0      LISTEN       0       0       0       0
0.0.0.0          8444     0.0.0.0          0      LISTEN       0       0       0       0
30.10.10.10      23       30.10.10.20      7115   TIME-WAIT    0       0       0       0
30.10.10.10      23       30.10.10.20      7118   ESTABLISHED  0       0       0       0
```

The following example displays information for VRF "green" connections through IP address 30.10.10.20.

```
device# show ip tcp vrf green connections 30.10.10.20
Total 1 TCP connections
   LISTEN: 0; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 1; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 0
Local IP address:port <-> Remote IP address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
30.10.10.10      23       30.10.10.20      7118   ESTABLISHED  0       0       0       0
```

History

Release version	Command history
09.0.00	This command was introduced.

show ip traffic

Displays IP traffic statistics.

Syntax

show ip traffic

Modes

User EXEC mode

Command Output

The **show ip traffic** command displays the following information:

Output Field	Description
IP Statistics	
received	The total number of IP packets received by the device.
sent	The total number of IP packets originated and sent by the device.
forwarded	The total number of forwarded IP packets.
filtered	The total number of filtered IP packets.
fragmented	The total number of IP packets fragmented by this device to accommodate the MTU of this device or of another device.
reassembled	The total number of fragmented IP packets that this device re-assembled.
bad header	The number of IP packets dropped by the device due to a bad packet header.
no route	The number of packets dropped by the device because there was no route.
unknown proto	The number of packets dropped by the device because the value in the Protocol field of the packet header is unrecognized by this device.
no buffer	This information is used by RUCKUS Technial Support.
other errors	The number of packets that this device dropped due to error types other than the types listed previously.
ICMP Statistics The ICMP statistics are derived from RFC 792, "Internet Control Message Protocol", RFC 950, "Internet Standard Subnetting Procedure", and RFC 1256, "ICMP Router Discovery Messages". Statistics are organized into Sent and Received.The following field descriptions apply to each statistic.	
total	The total number of ICMP messages sent or received by the device.
errors	This information is used by RUCKUS Technical Support.
unreachable	The number of Destination Unreachable messages sent or received by the device.
time exceed	The number of Time Exceeded messages sent or received by the device.
parameter	The number of Parameter Problem messages sent or received by the device.
source quench	The number of Source Quench messages sent or received by the device.
redirect	The number of Redirect messages sent or received by the device.
echo	The number of Echo messages sent or received by the device.
echo reply	The number of Echo Reply messages sent or received by the device.
timestamp	The number of Timestamp messages sent or received by the device.

Output Field	Description
timestamp reply	The number of Timestamp Reply messages sent or received by the device.
addr mask	The number of Address Mask Request messages sent or received by the device.
addr mask reply	The number of Address Mask Replies messages sent or received by the device.
irdp advertisement	The number of ICMP Router Discovery Protocol (IRDP) Advertisement messages sent or received by the device.
irdp solicitation	The number of IRDP Solicitation messages sent or received by the device.
UDP Statistics	
received	The number of UDP packets received by the device.
sent	The number of UDP packets sent by the device.
no port	The number of UDP packets dropped because the packet did not contain a valid UDP port number.
input errors	This information is used by RUCKUS Technical Support.
no data	Total number of UDP Packets received with no data .
TCP Statistics The TCP statistics are derived from RFC 793, "Transmission Control Protocol".	
current active tcbs	The number of TCP Control Blocks (TCBs) that are currently active.
tcbs allocated	The number of TCBs that have been allocated.
tcbs freed	The number of TCBs that have been freed.
tcbs protected	This information is used by RUCKUS Technical Support.
active opens	The number of TCP connections opened by this device by sending a TCP SYN to another device.
passive opens	The number of TCP connections opened by this device in response to connection requests (TCP SYNs) received from other devices.
failed attempts	This information is used by RUCKUS Technical Support.
active resets	The number of TCP connections this device reset by sending a TCP RESET message to the device at the other end of the connection.
passive resets	The number of TCP connections this device reset because the device at the other end of the connection sent a TCP RESET message.
input errors	This information is used by RUCKUS Technical Support.
in segments	The number of TCP segments received by the device.
out segments	The number of TCP segments sent by the device.
retransmission	The number of segments that this device retransmitted because the retransmission timer for the segment had expired before the device at the other end of the connection had acknowledged receipt of the segment.
in connections requests	The number of connection requests received by the device.
out connections requests	The number of connection requests sent by the device.
connections established	The total number of TCP connections established.
acks	The total number acknowledgments received.
duplicate acks	The total number of duplicate acknowledgments received.
duplicate bytes	The total number of TCP packets received with duplicate sequence numbers.
bad checksum	The total number of TCP packets received with a bad checksum.
no checksum	The total number of TCP packets received with no checksum.
invalid header length	The total number of TCP packets received where the header length is less than the minimum header length.
illegal TCP MSS option length	The total number of TCP packets received with an illegal TCP MSS option length.
illegal option	The total number of TCP packets received with an illegal kind of TCP option.

Output Field	Description
minimum TCP header	The total number of TCP packets received with the length of the packet less than the minimum TCP header length requirement.
invalid segment	TCP invalid segments received.

Examples

The following example shows sample output from the **show ip traffic** command.

```
device> show ip traffic
IP Statistics
  9423729 received, 34650 sent, 0 forwarded
  0 filtered, 0 fragmented, 0 reassembled, 0 bad header
  0 no route, 0 unknown proto, 0 no buffer, 2477 other errors

ARP Statistics
  5169915 total recv, 1970178 req recv, 32159 req sent, 1761422 rep sent
  0 pending drop, 0 invalid source, 0 invalid dest
  0 mis-match dst-mac, 0 mis-match ip addr, 0 mis-match src-mac

ICMP Statistics
Received:
  2 total, 0 errors, 0 unreachable, 0 time exceed
  0 parameter, 0 source quench, 0 redirect, 0 echo,
  2 echo reply, 0 timestamp, 0 timestamp reply, 0 addr mask
  0 addr mask reply, 0 irdp advertisement, 0 irdp solicitation
Sent:
  29 total, 0 errors, 18 unreachable, 0 time exceed
  0 parameter, 0 source quench, 0 redirect, 11 echo,
  0 echo reply, 0 timestamp, 0 timestamp reply, 0 addr mask
  0 addr mask reply, 0 irdp advertisement, 0 irdp solicitation

UDP Statistics
  528301 received, 75777 sent, 1091 no port, 0 input errors, 0 no data

TCP Statistics
  0 active opens, 0 passive opens, 0 failed attempts
  0 active resets, 0 passive resets, 0 input errors
  0 in segments, 0 out segments, 0 retransmission
  0 in connections requests, 4 out connections requests, 0 connections established,
  0 acks, 0  duplicate acks, 0 duplicate bytes
  0 bad checksum, 0 no checksum, 0 invalid header length
  0 illegal TCP MSS option length, 0 illegal option, 0 minimum TCP header, 0 invalid segment
```

History

Release version	Command history
08.0.95	The command output was enhanced to show more detailed information for TCP and User Datagram Protocol (UDP) statistics.

show ip tunnel traffic

Displays the link status of the tunnel and the number of keepalive packets received and sent on the tunnel.

Syntax

show ip tunnel traffic

Modes

User EXEC mode

Command Output

The **show ip tunnel traffic** command displays the following information:

Output field	Description
Tunnel Status	Indicates whether the tunnel is up or down. Possible values are: • Up/Up - The tunnel and line protocol are up. • Up/Down - The tunnel is up and the line protocol is down. • Down/Up - The tunnel is down and the line protocol is up. • Down/Down - The tunnel and line protocol are down.
Packet Received	The number of packets received on the tunnel since it was last cleared by the administrator.
Packet Sent	The number of packets sent on the tunnel since it was last cleared by the administrator.
KA recv	The number of keepalive packets received on the tunnel since it was last cleared by the administrator.
KA sent	The number of keepalive packets sent on the tunnel since it was last cleared by the administrator.

Examples

The following output from the **show ip tunnel traffic** command displays the link status of the tunnel and the number of keepalive packets received and sent on the tunnel.

```
device# show ip tunnel traffic
IP GRE Tunnels
Tunnel    Status         Packet Received    Packet Sent    KA recv     KA sent
1         up/up             362                  0           362         362
3         up/up             0                    0           0           0
10        down/down         0                    0           0           0
```

show ip vrrp

Displays information about IPv4 Virtual Router Redundancy Protocol (VRRP) sessions.

Syntax

show ip vrrp [**brief**]

show ip vrrp [**ethernet** *unit/slot/port* | **ve** *num*]

show ip vrrp [**statistics** [**ethernet** *unit/slot/port* | **ve** *num*]]

show ip vrrp [**ve** *num* [**vrid** *VRID*]]

show ip vrrp [**vrid** *VRID* [**ethernet** *unit/slot/port* | **ve** *num*]]

Parameters

brief

Displays summary information about the VRRP session.

ethernet *unit/slot/ port*

Displays IPv4 VRRP information only for the specified port. A forward slash "/" must be entered between the unit, slot, and port numbers.

statistics

Displays statistical information about the VRRP session.

ve *num*

Displays IPv4 VRRP information only for the specified virtual Ethernet port.

vrid *VRID*

Displays IPv4 VRRP information only for the specified virtual-group ID.

Modes

User EXEC mode

Usage Guidelines

Use this command to display information about IPv4 VRRP sessions, either in summary or full-detail format. You can also specify a virtual group or interface for which to display output.

This command supports IPv4 VRRP. You can modify or redirect the displayed information by using the default Linux tokens (|, >).

Command Output

The **show ip vrrp** command displays the following information.

Output field	Description
Total number of VRRP routers defined	The total number of virtual routers configured and currently running on this RUCKUS ICX device. For example, if the device is running VRRP-E, the total applies only to VRRP-E routers.

Output field	Description
Interface	The interface on which VRRP or VRRP-E is configured. If VRRP or VRRP-E is configured on multiple interfaces, information for each interface is listed separately.
VRID	The ID of the virtual router configured on this interface. If multiple virtual routers are configured on the interface, information for each virtual router is listed in a separate row.
Current Priority	The current VRRP or VRRP-E priority of this RUCKUS device for the virtual router.
Flags Codes	Whether the backup preempt mode is enabled and which version of VRRP is enabled. If the backup preempt mode is enabled, this field contains a "P". If the mode is disabled, this field is blank. • P:Preempt • 2:V2—VRRP Version 2 • 3:V3—VRRP Version 3 • S:Short-Path-Fwd—Short-path forwarding is enabled
State	This device's VRRP state for the virtual router. The state can be one of the following: • Init—The virtual router is not enabled (activated). If the state remains Init after you activate the virtual router, make sure that the virtual router is also configured on the other routers and that the routers can communicate with each other. If the state is Init and the mode is incomplete, make sure that you have specified the IP address for the virtual router. • Backup—This device is a backup for the virtual router. • Master—This device is the master for the virtual router.
Master IP Address	The IP address of the router interface that is currently the Master for the virtual router. If the IP address is assigned on this device, "Local" is displayed here.
Backup IP Address	The IP addresses of the router interfaces that are currently backups for the virtual router. If the IP address is not known in th routing table, "Unknown" is displayed here.
Virtual IP Address	The virtual IP address that is being backed up by the virtual router.

Examples

The following example displays VRRP session information in summary format.

```
device(config)# show ip vrrp brief

Total number of VRRP routers defined: 2
Flags Codes - P:Preempt 2:V2 3:V3 S:Short-Path-Fwd
Inte- VRID  Current  Flags    State   Master IP Backup IP  Virtual IP
rface       Priority                  Address   Address    Address
------------------------------------------------------------------------
1/1/1  10    255      P2-     Master  Local     Unknown    10.30.30.2
1/1/3  13    100      P2-     Master  Local     Unknown    10.13.13.3
```

The following example displays IPv4 VRRP configuration information about VRID 1.

```
device# show ip vrrp vrid 1

Interface 1/1/1
---------------
auth-type no authentication
VRID 1 (index 1)
interface 1/1/1
state master
administrative-status enabled
version v2
mode owner
virtual mac aaaa.bbbb.cccc (configured)
priority 255
current priority 255
track-priority 2
hello-interval 1 sec
backup hello-interval 6
```

show ip vrrp-extended

Displays information about IPv4 Virtual Router Redundancy Protocol Extended (VRRP-E) sessions.

Syntax

show ip vrrp-extended [**brief**]

show ip vrrp-extended [**ethernet** *unit/slot/port* | **ve** *num*]

show ip vrrp-extended [**statistics** [**ethernet** *unit/slot/port* | **ve** *num*]]

show ip vrrp-extended [**ve** *num* [**vrid** *VRID*]]

show ip vrrp-extended [**vrid** *VRID* [**ethernet** *unit/slot/port* | **ve** *num*]]

Parameters

brief
Displays summary information about the VRRP-E session.

ethernet *unit/slot/ port*
Displays IPv4 VRRP-E information only for the specified port. A forward slash "/" must be entered between the unit, slot, and port numbers.

ve *num*
Displays IPv4 VRRP-E information only for the specified virtual Ethernet port.

statistics
Displays statistical information about the VRRP-E session.

vrid *VRID*
Displays IPv4 VRRP-E information only for the specified virtual-group ID.

Modes

User EXEC mode

Usage Guidelines

Use this command to display information about IPv4 VRRP-E sessions, either in summary or full-detail format. You can also specify a virtual group or interface for which to display output.

This command supports IPv4 VRRP-E. You can modify or redirect the displayed information by using the default Linux tokens (|, >).

This command can be entered in any mode on the device.

Command Output

The **show ip vrrp-extended** command displays the following information.

Output field	Description
Total number of VRRP-E routers defined	The total number of virtual routers configured and currently running on this RUCKUS ICX device. For example, if the device is running VRRP-E, the total applies only to VRRP-E routers.
Interface	The interface on which VRRP or VRRP-E is configured. If VRRP or VRRP-E is configured on multiple interfaces, information for each interface is listed separately.
VRID	The ID of the virtual router configured on this interface. If multiple virtual routers are configured on the interface, information for each virtual router is listed in a separate row.
Current Priority	The current VRRP or VRRP-E priority of this device for the virtual router.
Flags	Whether the backup preempt mode is enabled. If the backup preempt mode is enabled, this field contains a "P". If the mode is disabled, this field is blank. • P:Preempt 2:V2 3:V3 • 2: implies VRRP Version2 • 3: implies VRRP Version3
State	This device's VRRP state for the virtual router. The state can be one of the following: • Init—The virtual router is not enabled (activated). If the state remains Init after you activate the virtual router, make sure that the virtual router is also configured on the other routers and that the routers can communicate with each other. If the state is Init and the mode is incomplete, make sure that you have specified the IP address for the virtual router. • Backup—This device is a backup for the virtual router. • Master—This device is the master for the virtual router.
Master IP Address	The IP address of the router interface that is currently the Master for the virtual router. If the IP address is assigned on this device, “Local” is displayed here.
Backup IP Address	The IP addresses of the router interfaces that are currently backups for the virtual router. If the IP address is not known in th routing table, “Unknown” is displayed here.
Virtual IP Address	The virtual IP address that is being backed up by the virtual router.

Examples

The following example displays summary information for a VRRP-E session.

```
device# show ip vrrp-extended brief

Total number of VRRP-E routers defined: 2
Flags Codes - P:Preempt 2:V2 3:V3 S:Short-Path-Fwd
Inte- VRID  Current  Flags    State   Master IP Backup IP  Virtual IP
rface       Priority                 Address   Address    Address
-------------------------------------------------------------------
Ve 1  2     255      P2-      Master  Local     10.30.20.2 10.30.30.2
Ve 3  4     100      P2-      Backup  Local     10.30.20.2 10.30.30.2
```

The following example displays detailed information for a VRRP-E backup device.

```
device(config)# show ip vrrp-extended

Total number of vrrp-extended routers defined: 1
Interface v10
----------------
auth-type no authentication
VRID 10 (index 1)
interface v10
state backup
administrative-status enabled
mode non-owner(backup)
virtual mac 02e0.52a0.c00a
priority 50
current priority 50
track-priority 5
hello-interval 1 sec
backup hello-interval 60 sec
slow-start timer (configured) 30 sec
advertise backup disabled
dead-interval 3600 ms
preempt-mode true
virtual ip address 10.10.10.254
next hello sent in 1000ms
track-port 1/1/1 (up)
master router 10.10.10.4 expires in 3.1 sec
short-path-forwarding enabled
```

The following example displays IPv4 VRRP-E statistics. The “received vrrp-extended packets with unknown or inactive vrid” shows the number of packets that contain virtual router IDs that are not configured on the device or its interface.

```
device> show ip vrrp-extended statistics

Global VRRP-Extended statistics
-------------------------------
- received vrrp-extended packets with checksum errors = 0
- received vrrp-extended packets with invalid version number = 0
- received vrrp-extended packets with unknown or inactive vrid = 1480
Interface v10
----------------
VRID 1
- number of transitions to backup state = 1
- number of transitions to master state = 1
- total number of vrrp-extended packets received = 0
. received backup advertisements = 0
. received packets with zero priority = 0
. received packets with invalid type = 0
. received packets with invalid authentication type = 0
. received packets with authentication type mismatch = 0
. received packets with authentication failures = 0
. received packets dropped by owner = 0
. received packets with ip ttl errors = 0
. received packets with ip address mismatch = 0
. received packets with advertisement interval mismatch = 0
. received packets with invalid length = 0
- total number of vrrp-extended packets sent = 2004
. sent backup advertisements = 0
. sent packets with zero priority = 0
- received arp packets dropped = 0
- received proxy arp packets dropped = 0
- received ip packets dropped = 0
```

The following example displays IPv4 VRRP-E configuration information about VRID 1.

```
device# show ip vrrp-extended vrid 1

Interface 1/1/1
---------------
auth-type md5-authentication
VRID 1 (index 1)
interface 1/1/1
state master
administrative-status disabled
mode non-owner(backup)
virtual mac aaaa.bbbb.cccc (configured)
priority 100
current priority 100
track-priority 5
hello-interval 1 sec
backup hello-interval 60 sec
slow-start timer (configured) 30 sec
advertise backup disabled
dead-interval 0 ms
preempt-mode true
virtual ip address 10.20.1.100
short-path-forwarding disabled
```

The following example displays whether the VRRP-E hitless upgrade feature is enabled. This feature is used in conjunction with the short-path forwarding feature. In this example, the **activate backup** and the **short-path-forwarding** commands are enabled. Only partial output is displayed.

```
device# show ip vrrp-extended

Total number of VRRP-Extended routers defined: 1
Interface v10
 auth-type no authentication
 VRID 5
  state backup
  administrative-status enabled
.
.
.
  short-path-forwarding enabled
  activate-backup: enabled
```

History

Release version	Command history
08.0.50	This command was modified to add new output for the VRRP-E hitless upgrade feature.

show ipc_stats

Displays reliable Inter-process Communications (IPC) and dynamic queue statistics.

Syntax

show ipc_stats

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

NTP configuration mode

Examples

The following is sample output from the **show ipc_stats** command.

```
device# show ipc_stats

Total available Hsync channel space = 1048580
Total available Appl channel space = 524292
Total number of application msgs in dyn queue = 0
Total number of hsync msgs in dyn queue = 0
Total number of rel sync msgs in dyn queue = 0
Total number of rx pkt msgs in standby dynamic queue = 0
Total number of rx pkt msgs in active dyn queue = 0
Total number of rx pkts relayed = 0
Total number of rx pkts received = 5686578
Total number of dyn-sync messages received so far = 3
Total number of rel-sync pending complete = 0
Total number of L3 baseline-sync packets = 655
Total number of packet drops in sync = 0
Is image_sync_in_progress? = 0
Total num of rx dyn queue drops = 0
Total num of jumbo corrupts = 0
Total number of messages in IP send queue = 0
```

show ipv6

Displays the details of the IPv6 configuration.

Syntax

show ipv6

Modes

User EXEC mode

Examples

The following is sample output from the **show ipv6** command.

```
device# show ipv6
Global Settings
  IPv6 is enabled
  Link-local address(es):
    fe80::768e:f8ff:fef9:6d80 [Preferred]
  Global unicast address(es):
    2620:100:c:fe23:768e:f8ff:fef9:6d80 [Preferred],  subnet is 2620:100:c:fe23::/64
  Joined group address(es):
    ff02::1:fff9:6d80
    ff02::1
  Best Default Router : 2620:100:c:fe23:10:37:65:129 PMTUS : 0
  MTU is 1500 bytes
  ND DAD is enabled, number of DAD attempts: 3
  ND reachable time is 30000 miliseconds
  ND retransmit interval is 1000 miliseconds
  Current Hop Limit is 64
  Hosts use stateless autoconfig for addresses
  No Inbound Access List Set
  No Outbound Access List Set
  No IPv6 DNS Server Address set
```

History

Release version	Command history
08.0.50	The output was updated to display the best default router.

show ipv6 access-list

Displays the IPv6 access control lists (ACLs) configured on a device.

Syntax

show ipv6 access-list [*acl-name*]

Parameters

acl-name

Specifies the IPv6 ACL name.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

ACL configuration mode

Usage Guidelines

From FastIron release 08.0.50, sequence numbers are automatically added to existing ACL rules, in the following manner:

- The first rule within each ACL is numbered 10.
- The sequence number for each succeeding rule is incremented by 10.

Examples

The following example displays information about all the IPv6 ACLs configured.

```
device# show ipv6 access-list
ipv6 access-list v6-ACL1: 1 entries
10: deny ipv6 any any

ipv6 access-list v6-ACL2: 1 entries
10: permit ipv6 any any

ipv6 access-list v6-ACL3: 2 entries
10: deny ipv6 2001:DB8:10::/64 any
20: permit ipv6 any any

ipv6 access-list v6-ACL4: 2 entries
10: deny ipv6 2001:DB8::/64 any
20: permit ipv6 any any

ipv6 access-list rate-ACL: 1 entries
10: permit ipv6 any any traffic-policy rate800M

ipv6 access-list v6-ACL5: 8 entries
10: permit tcp 2001:DB8::/64 any
20: permit ipv6 2001:DB8::/64 any
30: permit ipv6 2001:DB8:101::/64 any
40: permit ipv6 2001:DB8:10::/64 2001:DB8:102::/64
50: permit ipv6 host 2001:DB8:aa:10::102 host 2001:DB8:101::102
60: permit ipv6 host 2001:DB8:10::101 host 2001:DB8:101::101 dscp-matching 0
70: dscp-marking 63 dscp-cos-mapping
80: permit ipv6 any any dscp-matching 63 dscp-cos-mapping
90: permit ipv6 any any fragments
```

The following example displays information for a specific IPv6 ACL.

```
device# show ipv6 access-list rtr
ipv6 access-list rtr: 3 entries
10: remark This entry permits ipv6 packets from 2001:DB8::2 to any destination
permit ipv6 host 2001:DB8::2 any
20: remark This entry denies udp packets from any source to any destination
deny udp any any
30: remark This entry denies IPv6 packets from any source to any destination
deny ipv6 any any
```

History

Release version	Command history
08.0.50	The command was modified to add sequence numbers automatically to existing rules.

show ipv6 access-lists bindings

Displays the current IPv6 ACL-to-interface bindings.

Syntax

show ipv6 access-lists { **bindings** }

Modes

All modes

Examples

The following example...

```
device# show ipv6 access-lists bindings
ACL NAME  TARGET                DIRECTION
========= =======               ==========
```

History

Release version	Command history
08.0.95	This command was introduced.

show ipv6 access-lists brief

Displays a summary of IPv6 ACLs.

Syntax

show ipv6 access-lists { **brief** }

Modes

All modes

Examples

The following example shows three IPv6 ACLs are configured for the device.

```
device# show ipv6 access-list brief
ipv6 access-list acl1: 5 entries
ipv6 access-list acl2: 10 entries
ipv6 access-list acl3: 1 entry
```

History

Release version	Command history
08.0.95	This command was introduced.

show ipv6 bgp

Displays entries in the BGP4+ routing table.

Syntax

show ipv6 bgp

show ipv6 bgp *ipv6-prefix /prefix-length*

show ipv6 bgp *ipv6-prefix /prefix-length* **longer-prefixes**

Parameters

ipv6-prefix

Specifies an IPv6 network number.

/prefix-length

Specifies the length of the IPv6 prefix.

longer-prefixes

Displays routes that match a specified or longer BGP prefix.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp** command displays the following information:

Output field	Description
Total number of BGP Routes (appears in display of all BGP routes only)	The number of routes known by the device.
Number of BGP Routes matching display condition (appears in display that matches specified and longer prefixes)	The number of routes that matched the display parameters you entered. This is the number of routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the left column of the display, to the left of each route. The status codes are described in the command's output.
Origin codes	A character the display uses to indicate the route's origin. The origin code appears to the right of the AS path (Path field). The origin codes are described in the command's output.
Network	The network prefix and prefix length.
Next Hop	The next-hop router for reaching the network from the device.
MED	The value of the route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for this route relative to other routes in the local AS. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 - 4294967295.
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.

Output field	Description
Path	The route's AS path.

Examples

The following example displays sample output from the **show ipv6 bgp** command.

```
device> show ipv6 bgp

Total number of BGP Routes: 4
Status codes: s suppressed, d damped, h history, * valid, > best, i internal, S
stale
Origin codes: i - IGP, e - EGP, ? - incomplete
    Network                 Next Hop     MED    LocPrf     Weight Path
*>  2001:db8:10:10::/64 ::              1      100        32768  ?
*>  2001:db8:113:113::/64  ::
                                        1      100        32768  i
*>  2001:db8:400:400::/64  ::1
                                        0      100        32768  i
*i  2001:db8:400:400::/64  2001:db8:400:400::2
                                        0      400        0      65005 65010 ?
*>i 2001:db8:824:824::/64  2001:db8:400:400::2
                                        0      400        0      65005 65010 i
```

The following example displays sample output from the **show ipv6 bgp** command, showing information for prefix 2001:db8:400:400::/64, when the **longer-prefixes** keyword is used.

```
device> show ipv6 bgp 2001:db8:400:400::/64 longer-prefixes

Number of BGP Routes matching display condition : 2
Status codes: s suppressed, d damped, h history, * valid, > best, i internal
Origin codes: i - IGP, e - EGP, ? - incomplete
    Network            Next Hop        MED    LocPrf     Weight Path
*>  2001:db8:400:400::/64  ::
                                       0      100        32768  i
*i  2001:db8:400:400::/64  2001:db8:400:400::2
                                       0      400        0      65005 65010 ?
```

show ipv6 bgp attribute-entries

Displays BGP4+ route-attribute entries that are stored in device memory.

Syntax

show ipv6 bgp attribute-entries

Modes

User EXEC mode

Usage Guidelines

The route-attribute entries table lists the sets of BGP4+ attributes that are stored in device memory. Each set of attributes is unique and can be associated with one or more routes. In fact, the device typically has fewer attribute entries than routes. Use this command to view BGP4+ route-attribute entries that are stored in device memory.

Command Output

The **show ipv6 bgp attribute-entries** command displays the following information:

Output field	Description
Total number of BGP Attribute Entries	The number of entries contained in the device's BGP4+ route-attribute entries table.
Next Hop	The IPv6 address of the next hop router for routes that have this set of attributes.
MED	The cost of the routes that have this set of attributes.
Origin	The source of the route information. The origin can be one of the following: • EGP - The routes with this set of attributes came to BGP4+ through EGP. • IGP - The routes with this set of attributes came to BGP4+ through IGP. • INCOMPLETE - The routes came from an origin other than EGP or IGP. For example, they may have been redistributed from OSPFv3 or RIPng. When BGP4+ compares multiple routes to a destination to select the best route, IGP is preferred over EGP, and both are preferred over INCOMPLETE.
Originator	The originator of the route in a route-reflector environment.
Cluster List	The route-reflector clusters through which this set of attributes has passed.
Aggregator	Aggregator information: • AS Number shows the AS in which the network information in the attribute set was aggregated. This value applies only to aggregated routes and is otherwise 0. • Router-ID shows the router that originated this aggregator.

Output field	Description
Atomic	Whether the network information in this set of attributes has been aggregated and this aggregation has resulted in information loss: • TRUE - Indicates information loss has occurred • FALSE - Indicates no information loss has occurred • None - Indicates this attribute is not present. **NOTE** Information loss under these circumstances is a normal part of BGP4+ and does not indicate an error.
Local Pref	The degree of preference for routes that use this set of attributes relative to other routes in the local AS.
Communities	The communities that routes with this set of attributes are in.
AS Path	The ASs through which routes with this set of attributes have passed. The local AS is shown in parentheses.
Address	For debugging purposes only.
Hash	For debugging purposes only.
Links	For debugging purposes only.
Reference Counts	For debugging purposes only.

Examples

The following example show sample output for the **show ip bgp attribute-entries** command.

```
device> show ipv6 bgp attribute-entries

Total number of BGP Attribute Entries: 4
1       Next Hop  : ::                                          MED :1
        Origin:IGP
        Originator:0.0.0.0          Cluster List:None
        Aggregator:AS Number :0     Router-ID:0.0.0.0          Atomic:None
        Local Pref:100              Communities:Internet
        AS Path   : (length 0)
        AsPathLen: 0  AsNum: 0,     SegmentNum: 0, Neighboring As: 1, Source As 0
        Address: 0x2a8bd092  Hash:364 (0x1000000)
        Links: 0x0, 0x0
        Reference Counts: 2:0:4, Magic: 3
…
```

show ipv6 bgp config

Displays active BGP4+ configuration information.

Syntax

show ipv6 bgp config

Modes

User EXEC mode

Examples

The following example displays the active BGP4+ configuration information contained in the running configuration without displaying the entire running configuration.

```
device> show ipv6 bgp config

Current BGP configuration:
router bgp
local-as 65020
default-local-preference 400
neighbor 8.8.8.2 remote-as 65080
neighbor 140.140.140.1 remote-as 65020
neighbor 2001:db8:400:400::3 remote-as 65020
neighbor 2001:db8:400:400::3 soft-reconfiguration inbound
address-family ipv6 unicast
neighbor 2001:db8:400:400::3 activate
neighbor 2001:db8:400:400::3 route-map in bgp_map
exit-address-family
end
```

show ipv6 bgp dampened-paths

Displays all BGP4+ dampened routes.

Syntax

show ipv6 bgp dampened-paths

Modes

User EXEC mode

Command Output

The **show ipv6 bgp dampened-paths** command displays the following information:

Output field	Description
Status codes	A list of the characters the display uses to indicate the path's status. The status code appears in the left column of the display, to the left of each route. The status codes are described in the command's output. The status column displays a "d" for each dampened route.
Network	The destination network of the route.
From	The IPv6 address of the advertising peer.
Flaps	The number of times the path has flapped.
Since	The amount of time (in hh:mm:ss) since the first flap of this route.
Reuse	The amount of time (in hh:mm:ss) after which the path is available again.
Path	The AS path of the route.

Examples

The following example displays BGP4+ paths that have been dampened (suppressed) by route flap dampening.

```
device> show ipv6 bgp dampened-paths

Status Code >:best d:damped h:history *:valid
    Network              From                  Flaps     Since     Reuse     Path
*d     2001:db8::/13        2001:db8:1::1     1     0 :1 :14     0 :2 :20     100 1002 1000
*d     2001:db8::/16              2001:db8:1::1     1     0 :1 :14     0 :2 :20     100 1002 1000
*d     2001:db8::/14              2001:db8:1::1     1     0 :1 :14     0 :2 :20     100 1002 1000
*d     2001:db8::/15              2000:1:1::1       1  0 :1 :14     0 :2 :20     100 1002 1000
*d     2001:db8:8000::/17 2001:db8:1::1 1     0 :1 :14     0 :2 :20     100 1002 1000
*d     2001:db8:1:17::/64    2001:db8:1::1 1     0 :1 :18     0 :2 :20     100
```

show ipv6 bgp filtered-routes

Displays BGP4+ filtered routes that are received from a neighbor or peer group.

Syntax

show ipv6 bgp filtered-routes [**detail**] [*ipv6-addr* { **/** *mask* } [**longer-prefixes**] | **as-path-access-list** *name* | **prefix-list** *name*]

Parameters

detail

Displays detailed route information.

ipv6-addr

Specifies the IPv6 address of the destination network in dotted-decimal notation.

mask

Specifies the IPv6 mask of the destination network in CIDR notation.

longer-prefixes

Specifies all statistics for routes that match the specified route, or that have a longer prefix than the specified route.

as-path-access-list *name*

Specifies an AS-path ACL. The name must be between 1 and 32 ASCII characters in length.

prefix-list *name*

Specifies an IPv6 prefix list. The name must be between 1 and 32 ASCII characters in length.

name

Specifies the name of an AS-path ACL or prefix list.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp filtered-routes** command displays the following information:

Output field	Description
Number of BGP4+ Routes matching display condition	The number of routes that matched the display parameters you entered. This is the number of routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the left column of the display, to the left of each route. The status codes are described in the command's output. The status column displays an "IF" for each filtered route.
Prefix	The network address and prefix.
Next Hop	The next-hop router for reaching the network from the device.
MED	The value of the route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for this route relative to other routes in the local AS. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 - 4294967295.

Output field	Description
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.
Status	The route's status, which can be one or more of the following: • A - AGGREGATE - The route is an aggregate route for multiple networks. • B - BEST - BGP4+ has determined that this is the optimal route to the destination. • b - NOT-INSTALLED-BEST - BGP4+ has determined that this is the optimal route to the destination but did not install it in the IPv6 route table because the device received better routes from other sources (such as OSPFv3, RIPng, or static IPv6 routes). • C - CONFED_EBGP - The route was learned from a neighbor in the same confederation and AS, but in a different sub-AS within the confederation. • D - DAMPED - This route has been dampened (by the route dampening feature), and is currently unusable. • E - EBGP - The route was learned through a in another AS. • H - HISTORY - Route dampening is configured for this route, and the route has a history of flapping and is unreachable now. • I - IBGP - The route was learned through a in the same AS. • L - LOCAL - The route originated on this device. • M - MULTIPATH - BGP4+ load sharing is enabled and this route was selected as one of the best ones to the destination. The best route among the multiple paths also is marked with "B". **NOTE** If the "m" is shown in lowercase, the software was not able to install the route in the IPv6 route table. • S - SUPPRESSED - This route was suppressed during aggregation and thus is not advertised to neighbors. • F - FILTERED - This route was filtered out by BGP4+ route policies on the device, but the device saved updates containing the filtered routes.

Examples

The following example displays BGP4+ filtered routes.

```
device> show ipv6 bgp filtered-routes

Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix                                  Next Hop                          MED    LocPrf
Weight Status
1      2001:db8:2:2::/64    2001:db8:400:400::3         0                 100             0        IF
             AS_PATH:

2      2001:db8:10:10::/64     2001:db8:400:400::3         0               100             0        IF
             AS_PATH:

         AS_PATH:
```

The following example displays detailed information for BGP4+ filtered routes.

```
device> show ipv6 bgp filtered-routes detail

Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH S:SUPPRESSED F:FILTERED
1     Prefix: 2001:db8:1::/64, Status: EF, Age: 0h0m10s
    NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
    LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
    AS_PATH: 100
2     Prefix: 2001:db8:18::/64, Status: EF, Age: 0h0m10s
    NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
    LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
    AS_PATH: 100
3     Prefix: 2001:db8:1::/64, Status: EF, Age: 0h0m10s
    NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
    LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
    AS_PATH: 100
4     Prefix: 2001:db8:1::/64, Status: EF, Age: 0h0m10s
    NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
    LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
    AS_PATH: 100
5     Prefix: 2001:db8:11::1/128, Status: EF, Age: 0h0m10s
    NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
    LOCAL_PREF: 100, MED: 0, ORIGIN: igp, Weight: 0
    AS_PATH: 100
6     Prefix: 2001:db8:17::/64, Status: EF, Age: 0h0m10s
    NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
    LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
    AS_PATH: 100
```

show ipv6 bgp flap-statistics

Displays BGP4+ route-dampening statistics for all dampened routes with a variety of options.

Syntax

show ipv6 bgp flap-statistics

show ipv6 bgp flap-statistics *ipv6-addr* { / *mask* } [**longer-prefix**]

show ipv6 bgp flap-statistics as-path-filter *name*

show ipv6 bgp flap-statistics neighbor *ipv6-addr*

show ipv6 bgp flap-statistics regular-expression *name*

Parameters

ipv6-addr
IPv6 address of a specified route in dotted-decimal notation.

mask
IPv6 mask of a specified route in CIDR notation.

longer-prefixes
Displays statistics for routes that match the specified route or have a longer prefix than the specified route.

as-path-filter *name*
Specifies an AS-path filter.

neighbor
Displays flap statistics only for routes learned from the specified neighbor.

ip-addr
IPv4 address of the neighbor.

regular-expression
Specifies a regular expression in the display output on which to filter.

name
Name of an AS-path filter or regular expression.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp flap-statistics** command displays the following information:

Output field	Description
Total number of flapping routes	The total number of routes in the device's BGP4+ route table that have changed state and thus have been marked as flapping routes.

Output field	Description
Status code	Indicates the dampening status of the route, which can be one of the following: • > - This is the best route among those in the BGP4+ route table to the route's destination. • d - This route is currently dampened, and thus unusable. • h - The route has a history of flapping and is unreachable now. • * - The route has a history of flapping but is currently usable.
Network	The destination network of the route.
From	The IPv6 address of the advertising peer.
Flaps	The number of flaps (state changes) the route has experienced.
Since	The amount of time (in hh:mm:ss) since the first flap of this route.
Reuse	The amount of time (in hh:mm:ss) after which the path is again available.
Path	The AS path of the route.

Examples

The following example displays route dampening statistics.

```
device> show ipv6 bgp flap-statistics

Total number of flapping routes: 14
    Status Code  >:best d:damped h:history *:valid
    Network          From            Flaps  Since    Reuse    Path
h>  2001:db8::/32    2001:db8::47    1      0 :0 :13 0 :0 :0  65001 4355 1 701
*>  2001:db8::/32    2001:db8::47    1      0 :1 :4  0 :0 :0  65001 4355 701 62
```

show ipv6 bgp neighbors

Displays configuration information and statistics for BGP4+ neighbors of the device.

Syntax

show ipv6 bgp neighbors

show ipv6 bgp neighbors *ipv6-addr*

show ipv6 bgp neighbors last-packet-with-error

show ipv6 bgp neighbors routes-summary

Parameters

ipv6-addr

IPv6 address of a neighbor in dotted-decimal notation.

last-packet-with-error

Displays information about the last packet from a neighbor that contained an error.

routes-summary

Displays information about all route information received in UPDATE messages from BGP neighbors.

Modes

User EXEC mode

Usage Guidelines

Use this command to view configuration information and statistics for BGP neighbors of the device. Output shows all configured parameters for the neighbors. Only the parameters whose values differ from defaults are shown.

Command Output

The **show ipv6 bgp neighbors** command displays the following information:

Output field	Description
IP Address	The IPv6 address of the neighbor.
AS	The AS in which the neighbor resides.
EBGP or IBGP	Whether the neighbor session is an IBGP session, an EBGP session, or a confederation EBGP session: • EBGP - The neighbor is in another AS. • EBGP_Confed - The neighbor is a member of another sub-AS in the same confederation. • IBGP - The neighbor is in the same AS.
RouterID	The neighbor's router ID.

Output field	Description
State	The state of the device's session with the neighbor. The states are from the perspective of the session, not the neighbor's perspective. The state values can be one of the following: • IDLE - The BGP4+ process is waiting to be started. Usually, enabling BGP4 or establishing a neighbor session starts the BGP4+ process. – A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • ADMND - The neighbor has been administratively shut down. – A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • CONNECT - BGP4+ is waiting for the connection process for the TCP neighbor session to be completed. • ACTIVE - BGP4+ is waiting for a TCP connection from the neighbor. **NOTE** If the state frequently changes between CONNECT and ACTIVE, there may be a problem with the TCP connection. • OPEN SENT - BGP4+ is waiting for an Open message from the neighbor. • OPEN CONFIRM - BGP4+4 has received an OPEN message from the neighbor and is now waiting for either a KEEPALIVE or NOTIFICATION message. If the device receives a KEEPALIVE message from the neighbor, the state changes to Established. If the message is a NOTIFICATION, the state changes to Idle. • ESTABLISHED - BGP4+ is ready to exchange UPDATE messages with the neighbor. – If there is more BGP data in the TCP receiver queue, a plus sign (+) is also displayed. **NOTE** If you display information for the neighbor using the **show ipv6 bgp neighbor***<ipv6-address>* command, the TCP receiver queue value will be greater than 0.
Time	The amount of time this session has been in its current state.
KeepAliveTime	The keep alive time, which specifies how often this device sends keep alive messages to the neighbor.
HoldTime	The hold time, which specifies how many seconds the device will wait for a KEEPALIVE or UPDATE message from a BGP4+ neighbor before deciding that the neighbor is dead.
RefreshCapability	Whether the device has received confirmation from the neighbor that the neighbor supports the dynamic refresh capability.
Messages Sent and Received	The number of messages this device has sent to and received from the neighbor. The display shows statistics for the following message types: • Open • Update • KeepAlive • Notification • Refresh-Req
Last Update Time	Lists the last time updates were sent and received for the following: • NLRIs • Withdraws

Output field	Description
Last Connection Reset Reason	The reason the previous session with this neighbor ended. The reason can be one of the following: • No abnormal error has occurred. • Reasons described in the BGP specifications: – Message Header Error – Connection Not Synchronized – Bad Message Length – Bad Message Type – OPEN Message Error – Unsupported Version Number – Bad Peer AS Number – Bad BGP Identifier – Unsupported Optional Parameter – Authentication Failure – Unacceptable Hold Time – Unsupported Capability – UPDATE Message Error – Malformed Attribute List – Unrecognized Well-known Attribute – Missing Well-known Attribute – Attribute Flags Error – Attribute Length Error – Invalid ORIGIN Attribute – Invalid NEXT_HOP Attribute – Optional Attribute Error – Invalid Network Field – Malformed AS_PATH – Hold Timer Expired – Finite State Machine Error – Rcv Notification
Last Connection Reset Reason (cont.)	• Reasons specific to the implementation: – Reset All Peer Sessions – User Reset Peer Session – Port State Down – Peer Removed – Peer Shutdown – Peer AS Number Change – Peer AS Confederation Change – TCP Connection KeepAlive Timeout – TCP Connection Closed by Remote – TCP Data Stream Error Detected

Output field	Description
Notification Sent	If the device receives a NOTIFICATION message from the neighbor, the message contains an error code corresponding to one of the following errors. Some errors have subcodes that clarify the reason for the error. Where applicable, the subcode messages are listed underneath the error code messages. • Message Header Error – Connection Not Synchronized – Bad Message Length – Bad Message Type – Unspecified • Open Message Error – Unsupported Version – Bad Peer As – Bad BGP Identifier – Unsupported Optional Parameter – Authentication Failure – Unacceptable Hold Time – Unspecified • Update Message Error – Malformed Attribute List – Unrecognized Attribute – Missing Attribute – Attribute Flag Error – Attribute Length Error – Invalid Origin Attribute – Invalid NextHop Attribute – Optional Attribute Error – Invalid Network Field – Malformed AS Path – Unspecified • Hold Timer Expired • Finite State Machine Error • Cease • Unspecified
Notification Received	Refer to the description for Notification Sent.
Neighbor NLRI Negotiation	The state of the device's NLRI negotiation with the neighbor. The states can include the following: • Peer negotiated IPv6 unicast capability. • Peer configured for IPv6 unicast routes. • Peer negotiated IPv4 unicast capability. • Peer negotiated IPv4 multicast capability.
AO Keychain name	Name of the TCP keychain (AO) used for authentication

Output field	Description
TCP Connection state	The state of the connection with the neighbor. The connection can have one of the following states: • LISTEN - Waiting for a connection request. • SYN-SENT - Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED - Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED - Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1 - Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2 - Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT - Waiting for a connection termination request from the local user. • CLOSING - Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK - Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT - Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED - There is no connection state.
TCP Keychain name	Name of active TCP keychain used for TCP segment authentication
TCP-AO Enabled YES/NO	Indicates whether TCP keychain authentication is enabled.
TCP-AO in use YES/NO	Indicates whether TCP keychain authentication is being used.
Keychain valid YES/NO	Indicates whether there is a valid keychain in use.
No of segments dropped	Displays the number of segments dropped because they failed TCP authentication.
Send-Active-Key	Provides details on the TCP authentication send key associated with the active keychain: Key-Id Crypto Algorithm (for example, AES-128-CMAC or HMAC-SHA-1) Send-id - Configured identifier sent in outgoing TCP segments Recv-id - Configured identifier used to compare to send-id in received segments Include-tcp-options (YES/NO) - Specifies whether or not to include TCP options in calculating the Message Authentication Code (MAC) for a TCP segment Accept-ao-mistmatch (YES/NO) - Specifies whether TCP segments are accepted or dropped when TCP peers do not have matching TCP authentication support
Recv-Active-Key	Provides details on the TCP authentication receive key associated with the active keychain: Key-Id Crypto Algorithm (for example, AES-128-CMAC or HMAC-SHA-1) Send-id - Configured identifier sent in outgoing TCP segments Recv-id - Configured identifier used to compare to send-id in received segments Include-tcp-options (YES/NO) - Specifies whether or not to include TCP options in calculating the Message Authentication Code (MAC) for a TCP segment Accept-ao-mistmatch (YES/NO) - Specifies whether TCP segments are accepted or dropped when TCP peers do not have matching TCP authentication support
Maximum segment size	Displays maximum size for TCP segments.
TTL check: value	Diplays TTL value.
Byte Sent	The number of bytes sent.
Byte Received	The number of bytes received.

Output field	Description
Local host	The IPv6 address of the device.
Local port	The TCP port the RUCKUS device is using for the BGP4+ TCP session with the neighbor.
Remote host	The IPv6 address of the neighbor.
Remote port	The TCP port the neighbor is using for the BGP4+ TCP session with the device.
ISentSeq	The initial send sequence number for the session.
SendNext	The next sequence number to be sent.
TotUnAck	The number of sequence numbers sent by the device that have not been acknowledged by the neighbor.
TotSent	The number of sequence numbers sent to the neighbor.
ReTrans	The number of sequence numbers that the device retransmitted because they were not acknowledged.
UnAckSeq	The current acknowledged sequence number.
IRcvSeq	The initial receive sequence number for the session.
RcvNext	The next sequence number expected from the neighbor.
SendWnd	The size of the send window.
TotalRcv	The number of sequence numbers received from the neighbor.
DupliRcv	The number of duplicate sequence numbers received from the neighbor.
RcvWnd	The size of the receive window.
SendQue	The number of sequence numbers in the send queue.
RcvQue	The number of sequence numbers in the receive queue.
CngstWnd	The number of times the window has changed.

Examples

The following is sample output from the **show ipv6 bgp neighbors** command when no arguments or keywords are used.

```
device# show ipv6 bgp neighbors

    Total number of BGP Neighbors:3
1   IP Address: 2021:17::1:1:1, AS: 1 (IBGP), RouterID: 3.1.1.1, VRF: default-vrf
    State: ESTABLISHED, Time: 1d22h44m29s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 7 seconds, HoldTimer Expire in 24 seconds
    Minimal Route Advertisement Interval: 0 seconds
       PeerGroup: p1
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 2/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 2/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       1       16740     0            0
       Received: 1       1       18099     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                  Tx: ---        ---           Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV6 unicast  capability
      Peer configured for IPV6 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 3, Use Count: 6
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   318144, Received: 343965
       Local host:  2021:17::1:1:2, Local  Port: 8028
       Remote host: 2021:17::1:1:1, Remote Port: 179
       ISentSeq:   17791259  SendNext:   18109404  TotUnAck:          0
       TotSent:      318145  ReTrans:           2  UnAckSeq:   18109404
       IRcvSeq:   154039983  RcvNext:   154383949  SendWnd:       16365
       TotalRcv:     343966  DupliRcv:          0  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1439
```

The following is sample output from the **show ipv6 bgp neighbors** command when an IPv6 address is specified.

```
device#show ipv6 bgp neighbors 2021:17::1:1:1

1   IP Address: 2021:17::1:1:1, AS: 1 (IBGP), RouterID: 3.1.1.1, VRF: default-vrf
    State: ESTABLISHED, Time: 1d22h45m6s, KeepAliveTime: 10, HoldTime: 30
       KeepAliveTimer Expire in 1 seconds, HoldTimer Expire in 25 seconds
    Minimal Route Advertisement Interval: 0 seconds
       PeerGroup: p1
       RefreshCapability: Received
       GracefulRestartCapability: Received
           Restart Time 120 sec, Restart bit 0
           afi/safi 2/1, Forwarding bit 0
       GracefulRestartCapability: Sent
           Restart Time 120 sec, Restart bit 0
           afi/safi 2/1, Forwarding bit 0
    Messages:    Open    Update  KeepAlive Notification Refresh-Req
       Sent    : 1       1       16743     0            0
       Received: 1       1       18103     0            0
    Last Update Time: NLRI       Withdraw          NLRI       Withdraw
                  Tx: ---        ---           Rx: ---        ---
    Last Connection Reset Reason:Unknown
    Notification Sent:     Unspecified
    Notification Received: Unspecified
    Neighbor NLRI Negotiation:
      Peer Negotiated IPV6 unicast  capability
      Peer configured for IPV6 unicast  Routes
    Neighbor AS4 Capability Negotiation:
    Outbound Policy Group:
       ID: 3, Use Count: 6
    AO Keychain name : 1
    TCP Connection state: ESTABLISHED
     TCP Keychain name      : 1
     TCP-AO Enabled         : YES
     TCP-AO in use          : YES
     Keychain valid         : YES
     No of segments dropped : 0
     Send-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES
     Recv-Active-Key
     ---------------
       Key-id               : 1
       Crypto Algorithm     : AES-128-CMAC
       Send-id              : 100
       Recv-id              : 100
       Include-tcp-options  : YES
       Accept-ao-mismatch   : YES

     Maximum segment size: 1420
    TTL check: value: 0
       Byte Sent:   318201, Received: 344041
       Local host:  2021:17::1:1:2, Local  Port: 8028
       Remote host: 2021:17::1:1:1, Remote Port: 179
       ISentSeq:   17791259  SendNext:   18109461  TotUnAck:          0
       TotSent:      318202  ReTrans:           2  UnAckSeq:   18109461
       IRcvSeq:   154039983  RcvNext:   154384025  SendWnd:       16384
       TotalRcv:     344042  DupliRcv:          0  RcvWnd:        16384
       SendQue:           0  RcvQue:            0  CngstWnd:       1420
```

History

Release version	Command history
09.0.10	This command was modified to add TCP keychain authentication option (AO) information to the output.

show ipv6 bgp neighbors advertised-routes

Displays the routes that the device has advertised to the neighbor during the current BGP4+ session.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **advertised-routes** [**detail** | **/** *mask-bits*]

Parameters

ipv6-addr

Specifies the IPv6 address of a neighbor in dotted-decimal notation.

detail

Specifies detailed information.

mask-bits

Specifies the number of mask bits in CIDR notation.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbor advertised-routes** command displays the following information:

Output field	Description
Number of BGP4+ Routes advertised to specified neighbor (appears only in display for all routes)	The number of routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the Status column of the display. The status codes are described in the command's output.
Prefix	The advertised route's prefix.
Next Hop	The next-hop for reaching the advertised route from the device.
MED	The value of the advertised route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for the advertised route relative to other routes in the local autonomous system. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference range is 0 - 4294967295.
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.

Output field	Description
Status	The advertised route's status, which can be one or more of the following: • A - AGGREGATE. The route is an aggregate route for multiple networks. • B - BEST. BGP4+ has determined that this is the optimal route to the destination. • b - NOT-INSTALLED-BEST - BGP4+ has determined that this is the optimal route to the destination but did not install it in the IPv6 route table because the device received better routes from other sources (such as OSPFv3, RIPng, or static IPv6 routes). • E - EBGP. The route was learned through a in another AS. • I - IBGP. The route was learned through a in the same AS. • L - LOCAL. The route originated on this device.
AS-PATH	The AS-path information for the route.

Examples

The following example displays the routes the device has advertised to a specified neighbor.

```
device> show ipv6 bgp neighbor 2001:db8::110 advertised-routes

There are 2 routes advertised to neighbor 2001:db8::110
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST E:EBGP I:IBGP L:LOCAL
       Prefix           Next Hop   MED LocPrf   Weight Status
1      2001:db8::/32    ::         1            32768  BL
         AS_PATH:
2      2001:db8::/16    ::         1            32768  BL
         AS_PATH:
```

show ipv6 bgp neighbors flap-statistics

Displays the route flap statistics for routes received from or sent to a BGP4+ neighbor.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **flap-statistics**

Parameters

ipv6-addr

Specifies the IPv4 address of a neighbor in dotted-decimal notation.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbor flap-statistics** command displays the following information:

Output field	Description
Total number of flapping routes	The total number of routes in the neighbor's BGP4+ route table that have changed state and thus have been marked as flapping routes.
Status code	Indicates the status of the route, which can be one of the following: • > - This is the best route among those in the neighbor's BGP4+ route table to the route's destination. • d - This route is currently dampened, and thus unusable. • h - The route has a history of flapping and is unreachable now. • * - The route has a history of flapping but is currently usable.
Network	The destination network of the route.
From	The IPv6 address of the advertising peer.
Flaps	The number of flaps (state changes) the route has experienced.
Since	The amount of time (in hh:mm:ss) since the first flap of this route.
Reuse	The amount of time (in hh:mm:ss) after which the path is again available.
Path	The AS path of the route.

Examples

The following example displays route flap dampening statistics for a specified BGP4+ neighbor.

```
device> show ipv6 bgp neighbor 2001:db8::110 flap-statistics

Total number of flapping routes: 14
    Status Code  >:best d:damped h:history *:valid
    Network            From            Flaps Since    Reuse    Path
h>  2001:db8::/32       10.90.213.77    1     0 :0 :13 0 :0 :0  65001 4355 1 701
*>  2001:db8::/32       10.90.213.77    1     0 :1 :4  0 :0 :0  65001 4355 701 62
```

show ipv6 bgp neighbors last-packet-with-error

Displays the last packets with an error from BGP4+ neighbors of the device.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **last-packet-with-error** [**decode**]

Parameters

ipv6-addr

IPv6 address of a neighbor in dotted-decimal notation.

decode

Decodes the last packet that contained an error from any of a device's neighbors.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbor last-packet-with-error** command displays the following information:

Output field	Description
Total number of BGP Neighbors	The total number of configured neighbors for a device.
Last error	The error packet's contents decoded in a human-readable format or notification that no packets with an error were received.

Examples

The following example shows how to display the last packets with an error from BGP4+ neighbors of the device.

```
device> show ipv6 bgp neighbors 2001:db8::110 last-packet-with-error
```

show ipv6 bgp neighbors received

Displays Outbound Route Filters (ORFs) received from BGP4+ neighbors of the device.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **received** { **extended-community** | **prefix-filter** }

Parameters

ipv6-addr

Specifies the IPv6 address of a neighbor in dotted-decimal notation.

extended-community

Displays the results for ORFs that use the BGP Extended Community Attribute.

prefix-filter

Displays the results for ORFs that are prefix-based.

Modes

User EXEC mode

Examples

The following example displays sample output for the **show ipv6 bgp neighbors received** command when the **prefix-filter** keyword is used.

```
device> show ipv6 bgp neighbor 2001:db8::110 received prefix-filter

ip prefix-list 2001:db8::110: 4 entries
     seq 5 permit 2001:db8:3::45/16 ge 18 le 28
     seq 10 permit 2001:db8::4::88/24
     seq 15 permit 2001:db8:5::37/8 le 32
     seq 20 permit 2001:db8:6::83/16 ge 18
```

show ipv6 bgp neighbors received-routes

Lists all route information received in route updates from BGP4+ neighbors of the device since the soft-reconfiguration feature was enabled.

Syntax

show ipv6 bgp neighbors *iipv6-addr* **received-routes** [**detail**]

Parameters

ipv6-addr

IPv6 address of a neighbor in dotted-decimal notation.

detail

Displays detailed route information.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbor received-routes** command displays the following information:

Output field	Description
Number of BGP4+ Routes received from a neighbor	The number of routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the Status column of the display. The status codes are described in the command's output.
Prefix	The received route's prefix.
Next Hop	The IPv6 address of the next device that is used when forwarding a packet to the received route.
MED	The value of the route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for the advertised route relative to other routes in the local autonomous system. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 - 4294967295.
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.

Output field	Description
Status	The advertised route's status, which can be one or more of the following: A - AGGREGATE. The route is an aggregate route for multiple networks. B - BEST. BGP4+ has determined that this is the optimal route to the destination. b - NOT-INSTALLED-BEST - BGP4+ has determined that this is the optimal route to the destination but did not install it in the IPv6 route table because the device received better routes from other sources (such as OSPFv3, RIPng, or static IPv6 routes). D - DAMPED. This route has been dampened (by the route dampening feature), and is currently unusable. E - EBGP. The route was learned through a in another AS. H - HISTORY. Route dampening is configured for this route, and the route has a history of flapping and is unreachable now. I - IBGP. The route was learned through a in the same autonomous system. L - LOCAL. The route originated on this device. M - MULTIPATH. BGP4+ load sharing is enabled and this route was selected as one of the best ones to the destination. The best route among the multiple paths also is marked with "B". **NOTE** If the "m" is shown in lowercase, the software was not able to install the route in the IPv6 route table. S - SUPPRESSED. This route was suppressed during aggregation and thus is not advertised to neighbors. F - FILTERED. This route was filtered out by BGP4+ route policies on the device, but the saved updates containing the filtered routes.

Examples

The following example displays a summary of the route information received in route updates from neighbor 2001:db8::10.

```
device> show ipv6 bgp neighbor 2001:db8:400:400::2 received-route
       There are 4 received routes from neighbor 2001:db8:400:400::2
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix                Next Hop             MED LocPrf Weight  Status
1      2001:db8:202:202::/64  2001:db8:400:400::2  0   400    0       BI

         AS_PATH: 65005 65010
2      2001:db8:400:400::/64  2001:db8:400:400::2  0   400    0       I

         AS_PATH: 65005 65010
```

The following example displays output for the **show ipv6 bgp neighbor received-routes** when the **details** keyword is used.

```
device> show ipv6 bgp neighbor 2001:db8:1::1 received-routes detail

There are 4 received routes from neighbor 2001:db8:1::1
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH S:SUPPRESSED F:FILTERED
1 Prefix: 2001:db8:1000:1::/64, Status: BI, Age: 0h17m25s
NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
AS_PATH:
Adj_RIB_out count: 1, Admin distance 200
2 Prefix: 2001:db8:1::/64, Status: I, Age: 0h17m25s
NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
AS_PATH:
3 Prefix: 2001:db8:11::1/128, Status: BI, Age: 0h17m25s
NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
LOCAL_PREF: 100, MED: 0, ORIGIN: igp, Weight: 0
AS_PATH:
Adj_RIB_out count: 1, Admin distance 200
4 Prefix: 2001:db8:17::/64, Status: BI, Age: 0h17m25s
NEXT_HOP: 2001:db8:1::1, Learned from Peer: 2001:db8:1::1 (100)
LOCAL_PREF: 100, MED: 0, ORIGIN: incomplete, Weight: 0
AS_PATH:
Adj_RIB_out count: 1, Admin distance 200
```

show ipv6 bgp neighbors rib-out-routes

Displays information about the current BGP4+ Routing Information Base (Adj-RIB-Out) for specific neighbors and specific destination networks.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **rib-out-routes** [**detail**] [*ipv6-addr* [**/** *mask*]]

Parameters

ipv6-addr

IPv6 address of a neighbor in dotted-decimal notation.

last-packet-with-error

Displays the last packet with an error.

routes-summary

Displays routes received, routes accepted, number of routes advertised by peer, and so on.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbors rib-out-routes** command displays the following information:

Output field	Description
Number of RIB_out routes for a specified neighbor (appears only in display for all RIB routes)	The number of RIB routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the Status column of the display. The status codes are described in the command's output.
Prefix	The RIB route's prefix.
Next Hop	The next-hop router for reaching the route from the device.
MED	The value of the advertised route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for the route relative to other routes in the local autonomous system. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 - 4294967295.
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.

Output field	Description
Status	The RIB route's status, which can be one or more of the following: • A - AGGREGATE. The route is an aggregate route for multiple networks. • B - BEST. BGP4+ has determined that this is the optimal route to the destination. • E - EBGP. The route was learned through a in another autonomous system. • I - IBGP. The route was learned through a in the same autonomous system. • L - LOCAL. The route originated on this device.
AS-PATH	The AS-path information for the route.

Examples

The following example displays a summaryabout all RIB routes for neighbor 2001:db8::110.

```
device> show ipv6 bgp neighbor 2001:db8::110 rib-out-routes

       There are 2 RIB_out routes for neighbor 2001:db8::110
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST E:EBGP I:IBGP L:LOCAL
       Prefix             Next Hop    Metric     LocPrf     Weight Status
1      2001:db8::/32                 ::        1          100        32768  BL
         AS_PATH:
2      2001:db8::/16                      ::        1          100        32768  BL
         AS_PATH:
```

The following example displays detailed information about all RIB routes for neighbor 2001:db8::110.

```
device> show ipv6 bgp neighbor 2001:db8::110 rib-out-routes detail

                    There are 2 RIB_out routes for neighbor 2001:db8::110
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST E:EBGP I:IBGP L:LOCAL
1       Prefix: 2001:db8::/32,  Status: BL,  Age: 6d18h17m53s
         NEXT_HOP: ::,  Learned from Peer: Local Router
          LOCAL_PREF: 100,  MED: 1,  ORIGIN: incomplete,  Weight: 32768
           AS_PATH:
            Adj_RIB_out count: 1,  Admin distance 190
2       Prefix: 2001:db8::/16,  Status: BL,  Age: 6d18h21m8s
         NEXT_HOP: ::,  Learned from Peer: Local Router
          LOCAL_PREF: 100,  MED: 1,  ORIGIN: incomplete,  Weight: 32768
           AS_PATH:
            Adj_RIB_out count: 1,  Admin distance 190
            Adj_RIB_out count: 1,  Admin distance 190
```

show ipv6 bgp neighbors routes

Lists a variety of route information received in UPDATE messages from BGP4+ neighbors.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **routes**

show ipv6 bgp neighbors *ipv6-addr* **routes** { **best** | **not-installed-best** | **unreachable** }

show ipv6 bgp neighbors *ipv6-addr* **routes detail** { **best** | **not-installed-best** | **unreachable** }

Parameters

ipv6-addr

IPv6 address of a neighbor in dotted-decimal notation.

best

Displays routes received from the neighbor that are the best BGP4+ routes to their destination.

not-installed-best

Displays routes received from the neighbor that are the best BGP4+ routes to their destination but were not installed in the route table because the device received better routes from other sources.

unreachable

Displays routes that are unreachable because the device does not have a valid RIP, OSPF, or static route to the next hop.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbors routes** command displays the following information:

Output field	Description
Number of accepted routes from a specified neighbor	The number of routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the Status column of the display. The status codes are described in the command's output.
Prefix	The route's prefix.
Next Hop	The next-hop router for reaching the route from the device.
MED	The value of the route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for the route relative to other routes in the local autonomous system. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 - 4294967295.
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.

Output field	Description
Status	The route's status, which can be one or more of the following: • A - AGGREGATE. The route is an aggregate route for multiple networks. • B - BEST. BGP4+ has determined that this is the optimal route to the destination. • C - CONFED_EBGP. The route was learned from a neighbor in the same confederation and autonomous system, but in a different sub-AS within the confederation. • D - DAMPED. This route has been dampened (by the route dampening feature), and is currently unusable. • E - EBGP. The route was learned through a in another autonomous system. • H - HISTORY. Route dampening is configured for this route, and the route has a history of flapping and is unreachable now. • I - IBGP. The route was learned through a in the same autonomous system. • L - LOCAL. The route originated on this device. • M - MULTIPATH. BGP4+ load sharing is enabled and this route was selected as one of the best ones to the destination. The best route among the multiple paths also is marked with "B". **NOTE** If the "m" is shown in lowercase, the software was not able to install the route in the IPv6 route table. • S - SUPPRESSED. This route was suppressed during aggregation and thus is not advertised to neighbors. • F - FILTERED. This route was filtered out by BGP4+ route policies on the device, but the saved updates containing the filtered routes.
AS-PATH	The AS-path information for the route.

Examples

The following example shows sample output for the **show ip bgp neighbors routes** command when the **best** keyword is used.

```
device> show ipv6 bgp neighbor 2001:db8::106 routes best

       There are 2 accepted routes from neighbor 2001:db8::106
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH S:SUPPRESSED F:FILTERED
       Prefix             Next Hop           MED     LocPrf     Weight Status
1      2001:db8::/16                      2001:db8::106             1          100        0      BE
         AS_PATH: 65001
2      2001:db8::/32                            2001:db8::106             1          100        0
BE
         AS_PATH: 65001
```

The following example shows detailed sample output for the **show ip bgp neighbors routes** command when the **best** keyword is used.

```
device> show ipv6 bgp neighbor 2001:db8::106 routes detail best

       There are 2 accepted routes from neighbor 2001:db8::106
Searching for matching routes, use ^C to quit...
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH S:SUPPRESSED F:FILTERED
1       Prefix: 2001:db8::/16,  Status: BE,  Age: 18h48m56s
         NEXT_HOP: 2001:db8::106,  Learned from Peer: 2001:db8::106 (65001)
          LOCAL_PREF: 100,  MED: 1,  ORIGIN: incomplete,  Weight: 0
           AS_PATH: 65001
2       Prefix: 2001:db8::/32,  Status: BE,  Age: 18h48m56s
         NEXT_HOP: 2001:db8::106,  Learned from Peer: 2001:db8::106 (65001)
          LOCAL_PREF: 100,  MED: 1,  ORIGIN: incomplete,  Weight: 0
           AS_PATH: 65001
```

show ipv6 bgp neighbors routes-summary

Displays route summary information for all neighbors or a specified neighbor.

Syntax

show ipv6 bgp neighbors *ipv6-addr* **routes-summary**

Parameters

ipv6-addr

IPv6 address of a neighbor in dotted-decimal notation.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp neighbor routes-summary** command displays the following information:

Output field	Description
IP Address	The IPv6 address of the neighbor
Routes Received	How many routes the device has received from the neighbor during the current BGP4+ session: • Accepted or Installed - Indicates how many of the received routes the device accepted and installed in the BGP4+ route table. • Filtered or Kept - Indicates how many routes were filtered out, but were nonetheless retained in memory for use by the soft reconfiguration feature. • Filtered - Indicates how many of the received routes were filtered out.
Routes Selected as BEST Routes	The number of routes that the device selected as the best routes to their destinations.
BEST Routes not Installed in IPv6 Forwarding Table	The number of routes received from the neighbor that are the best BGP4+ routes to their destinations, but were nonetheless not installed in the IPv6 route table because the device received better routes from other sources (such as OSPFv3, RIPng, or static IPv6 routes).
Unreachable Routes	The number of routes received from the neighbor that are unreachable because the device does not have a valid RIPng, OSPFv3, or static IPv6 route to the next hop.
History Routes	The number of routes that are down but are being retained for route flap dampening purposes.
NLRIs Received in Update Message	The number of routes received in Network Layer Reachability (NLRI) format in UPDATE messages: • Withdraws - The number of withdrawn routes the device has received. • Replacements - The number of replacement routes the device has received.
NLRIs Discarded due to	Indicates the number of times the device discarded an NLRI for the neighbor due to the following reasons: • Maximum Prefix Limit - The device's configured maximum prefix amount had been reached. • AS Loop - An AS loop occurred. An AS loop occurs when the BGP4+ AS-path attribute contains the local AS number. • Invalid Nexthop Address - The next hop value was not acceptable. • Duplicated Originator_ID - The originator ID was the same as the local router ID. • Cluster_ID - The cluster list contained the local cluster ID, or contained the local router ID if the cluster ID is not configured.

Output field	Description
Routes Advertised	The number of routes the device has advertised to this neighbor: • To be Sent - The number of routes the device has queued to send to this neighbor. • To be Withdrawn - The number of NLRIs for withdrawing routes the device has queued up to send to this neighbor in UPDATE messages.
NLRIs Sent in Update Message	The number of NLRIs for new routes the device has sent to this neighbor in UPDATE messages: • Withdraws - The number of routes the device has sent to the neighbor to withdraw. • Replacements - The number of routes the device has sent to the neighbor to replace routes the neighbor already has.
Peer Out of Memory Count for	Statistics for the times the device has run out of BGP4+ memory for the neighbor during the current BGP4+ session: • Receiving Update Messages - The number of times UPDATE messages were discarded because there was no memory for attribute entries. • Accepting Routes(NLRI) - The number of NLRIs discarded because there was no memory for NLRI entries. This count is not included in the Receiving Update Messages count. • Attributes - The number of times there was no memory for BGP4+ attribute entries. • Outbound Routes (RIB-out) - The number of times there was no memory to place a "best" route into the neighbor's route information base (Adj-RIB-Out) for routes to be advertised. • Outbound Routes Holder - For debugging purposes only.

Examples

The following example displays routes summary information for neighbor 2001:db8::110.

```
device> show ipv6 bgp neighbor 2001:db8::110 routes-summary

1   IP Address: 2001:db8::110
Routes Accepted/Installed:0,  Filtered/Kept:0,  Filtered:0
   Routes Selected as BEST Routes:0
      BEST Routes not Installed in IP Forwarding Table:0
   Unreachable Routes (no IGP Route for NEXTHOP):0
   History Routes:0
NLRIs Received in Update Message:0,  Withdraws:0 (0),  Replacements:0
   NLRIs Discarded due to
      Maximum Prefix Limit:0, AS Loop:0
      Invalid Nexthop:0, Invalid Nexthop Address:0.0.0.0
     Invalid Confed aspath:0, maxas-limit aspath:0
      Duplicated Originator_ID:0, Cluster_ID:0
Routes Advertised:2,  To be Sent:0,  To be Withdrawn:0
NLRIs Sent in Update Message:2,  Withdraws:0,  Replacements:0
Peer Out of Memory Count for:
   Receiving Update Messages:0, Accepting Routes(NLRI):0
   Attributes:0, Outbound Routes(RIB-out):0 Outbound Routes Holder:0
```

show ipv6 bgp peer-group

Displays peer-group information.

Syntax

show ipv6 bgp [**vrf** *vrf-name*] **peer-group** [*peer-group-name*]

Parameters

vrf *vrf-name*

Displays output for the designated VRF.

peer-group-name

Displays output for the designated peer group.

Modes

User EXEC mode

Usage Guidelines

Only the parameters that have values different from their defaults are listed.

Examples

The following example shows sample output from the **show ipv6 bgp peer-group** command.

```
device# show ipv6 bgp peer-group
1   BGP peer-group is p1, Remote AS: 1
      Address family : IPV4 Unicast
        activate
      Address family : IPV6 Unicast
        activate
    Members:
       IP Address: 17.1.1.1
       IP Address: 2021:17::1:1:1
```

The following example shows information for the BGP peer group named p1.

```
device# show ipv6 bgp peer-group p1
2   BGP peer-group is p1, Remote AS: 1
      Address family : IPV4 Unicast
        activate
      Address family : IPV4 Multicast
        no activate
      Address family : IPV6 Unicast
        activate
      Address family : IPV6 Multicast
        no activate
      Address family : VPNV4 Unicast
        no activate
        no activate
      Address family : L2VPN VPLS
        no activate
    Members:
       IP Address: 17.1.1.1
       IP Address: 2021:17::1:1:1
```

The following example displays BGP peer group information for a specific VRF (blue).

```
device# show ipv6 bgp vrf blue peer-group
1   BGP peer-group is p1, Remote AS: 1
      Address family : IPV4 Unicast
        activate
      Address family : IPV6 Unicast
        activate
    Currently there are no members.
```

The following example displays information about BGP peers for a specific VRF (blue) and peer-group (p1).

```
device# show ipv6 bgp vrf blue peer-group p1
2   BGP peer-group is p1, Remote AS: 1
      Address family : IPV4 Unicast
        activate
      Address family : IPV4 Multicast
        no activate
      Address family : IPV6 Unicast
        activate
      Address family : IPV6 Multicast
        no activate
      Address family : VPNV4 Unicast
        no activate
        no activate
      Address family : L2VPN VPLS
        no activate
```

History

Release version	Command history
09.0.10	This command was modified to add the ability to specify a VRF.

show ipv6 bgp routes

Displays statistics for the routes in the device's BGP4+ route table.

Syntax

show ipv6 bgp routes [*num* | *ipv6-address/prefix* | **age** *num* | **as-path-access-list** *name* | **best** | **cidr-only** | **community-access-list** *name* | **community-reg-expression** *expression* | **detail** | **local** | **neighbor** *ipv6-addr* | **nexthop** *ipv6-addr* | **no-best** | **not-installed-best** | **prefix-list** *string* | **regular-expression** *name* | **route-map** *name* | **summary** | **unreachable**]

Parameters

num
Table entry at which the display starts. For example, if you want to list entries beginning with table entry 100, specify 100.

ipv6-address/prefix
Specifies an IPv6 address and prefix.

age *num*
Displays BGP4+ route information that is filtered by age.

as-path-access-list *name*
Displays BGP4+ route information that is filtered by autonomous system (AS)-path access control list (ACL).

best
Displays BGP4+ route information that the device selected as best routes.

cidr-only
Displays BGP4+ routes whose network masks do not match their class network length.

community-access-list *name*
Displays BGP4+ route information for an AS-path community access list.

community-reg-expression *expression*
Displays BGP4+ route information for an ordered community list regular expression.

detail
Displays BGP4+ detailed route information.

local
Displays BGP4+ route information about selected local routes.

neighbor *ipv6-addr*
Displays BGP4+ route information about selected BGP neighbors.

nexthop *ipv6-addr*
Displays BGP4+ route information about routes that are received from the specified next hop.

no-best
Displays BGP4+ route information that the device selected as not best routes.

not-installed-best
Displays BGP4+ route information about best routes that are not installed.

prefix-list *string*
Displays BGP4+ route information that is filtered by a prefix list.

regular-expression *name*
Displays BGP4+ route information about routes that are associated with the specified regular expression.

route-map *name*
Displays BGP4+ route information about routes that use the specified route map.

summary
Displays BGP4+ summary route information.

unreachable
Displays BGP4+ route information about routes whose destinations are unreachable through any of the BGP4+ paths in the BGP route table.

Modes

User EXEC mode

Command Output

The **show ipv6 bgp routes detail** command displays the following information:

Output field	Description
Number of BGP4+ Routes	The number of routes displayed by the command.
Status codes	A list of the characters the display uses to indicate the route's status. The status code appears in the Status column of the display. The status codes are described in the command's output.
Prefix	The route's prefix.
Next Hop	For normal IPv6 routes, next hop is the next hop IPv6 router to reach the destination. For the 6PE routes, next hop is the IPv4-mapped IPv6 address of the peer 6PE router.
Metric	The value of the route's MED attribute. If the route does not have a metric, this field is blank.
LocPrf	The degree of preference for the advertised route relative to other routes in the local AS. When the BGP4+ algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 - 4294967295.
Weight	The value that this device associates with routes from a specific neighbor. For example, if the receives routes to the same destination from two BGP4+ neighbors, the prefers the route from the neighbor with the larger weight.

Output field	Description
Status	The route's status, which can be one or more of the following: • A - AGGREGATE. The route is an aggregate route for multiple networks. • B - BEST. BGP4+ has determined that this is the optimal route to the destination. • b - NOT-INSTALLED-BEST - BGP4+ has determined that this is the optimal route to the destination but did not install it in the IPv6 route table because the device received better routes from other sources (such as OSPFv3, RIPng, or static IPv6 routes). • C - CONFED_EBGP. The route was learned from a neighbor in the same confederation and AS, but in a different sub-AS within the confederation. • D - DAMPED. This route has been dampened (by the route dampening feature), and is currently unusable. • E - EBGP. The route was learned through a in another AS. • H - HISTORY. Route dampening is configured for this route, and the route has a history of flapping and is unreachable now. • I - IBGP. The route was learned through a in the same AS. • L - LOCAL. The route originated on this. • M - MULTIPATH. BGP4+ load sharing is enabled and this route was selected as one of the best ones to the destination. The best route among the multiple paths also is marked with "B". **NOTE** If the "m" is shown in lowercase, the software was not able to install the route in the IPv6 route table. • S - SUPPRESSED. This route was suppressed during aggregation and thus is not advertised to neighbors.
AS-PATH	The AS-path information for the route.

Examples

The following example shows sample output from the **show ipv6 bgp routes** command.

```
device> show ipv6 bgp routes

Total number of BGP Routes: 4
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
       Prefix             Next Hop     MED     LocPrf    Weight Status
1      2001:db8:10:10::/64 ::          1                          100      32768  BL
         AS_PATH:
2      2001:db8:113:113::/64  ::
                                       1                          100      32768  BL
         AS_PATH:
3      2001::db8:400::/64  ::
                                       0         100      32768  BL
         AS_PATH:
4      2001:db8:400:400::/64  2001:db8:400:400::2
                                       0          400      0      I
         AS_PATH: 65005 65010
```

The following example shows sample output from the **show ipv6 bgp routes** command when the **detail** keyword is used.

```
device> show ipv6 bgp route detail

Total number of BGP Routes: 4
Status A:AGGREGATE B:BEST b:NOT-INSTALLED-BEST C:CONFED_EBGP D:DAMPED
       E:EBGP H:HISTORY I:IBGP L:LOCAL M:MULTIPATH m:NOT-INSTALLED-MULTIPATH
       S:SUPPRESSED F:FILTERED s:STALE
1 Prefix: 2001:db8:10:10::/64,  Status: BL,  Age: 8h31m39s
       NEXT_HOP: ::, Learned from Peer: Local Router
       LOCAL_PREF: 100,  MED: 0,  ORIGIN: incomplete,  Weight: 32768
       AS_PATH:
       Adj_RIB_out count: 3,  Admin distance 1
2 Prefix: 2001:db8:113:113::/64,  Status: BL,  Age: 6h58m35s
       NEXT_HOP: ::, Learned from Peer: Local Router
       LOCAL_PREF: 100,  MED: 0,  ORIGIN: igp,  Weight: 32768
       AS_PATH:
       Adj_RIB_out count: 3,  Admin distance 1
3 Prefix: 2001:db8:202:202::/64,  Status: BI,  Age: 5h42m36s
       NEXT_HOP: 2001:db8:400:400::2, Metric: 0,  Learned from Peer: 2001:db8:400:400::2 (65020)
       LOCAL_PREF: 400,  MED: 0,  ORIGIN: incomplete,  Weight: 0
       AS_PATH: 65005 65010
       Adj_RIB_out count: 1,  Admin distance 200
4 Prefix: 2001:db8:400:400::/64,  Status: BL,  Age: 5h43m14s
       NEXT_HOP: ::, Learned from Peer: Local Router
       LOCAL_PREF: 100,  MED: 0,  ORIGIN: igp,  Weight: 32768
       AS_PATH:
       Adj_RIB_out count: 3,  Admin distance 1
```

show ipv6 bgp routes community

Displays BGP4+ route information that is filtered by community and other options.

Syntax

show ipv6 bgp routes community { *num* | *aa:nn* | **internet** | **local-as** | **no-advertise** | **no-export** }

Parameters

community
Displays routes filtered by a variety of communities.

num
Specifies a community number n the range from 1 to 4294967200.

aa:nn
Specifies an autonomous system-community number.

internet
Displays routes for the Internet community.

local-as
Displays routes for a local sub-AS within the confederation.

no-advertise
Displays routes with this community that cannot be advertised to any other BGP4 devices at all.

no-export
Displays routes for the community of sub-ASs within a confederation.

Modes

User EXEC mode

Examples

The following example shows how to display BGP4+ route information that is filtered by a specified community.

```
device> show ipv6 bgp routes community 4
```

show ipv6 bgp summary

Displays summarized information about the status of all BGP4+ connections.

Syntax

show ipv6 bgp summary

Modes

User EXEC mode

Command Output

The **show ipv6 bgp summary** command displays the following information.

Output field	Description
Router ID	The device's router ID.
Local AS Number	The BGP4+ AS number in which the device resides.
Confederation Identifier	The autonomous system number of the confederation in which the device resides.
Confederation Peers	The numbers of the local autonomous systems contained in the confederation. This list matches the confederation peer list you configure on the device.
Maximum Number of Paths Supported for Load Sharing	The maximum number of route paths across which the device can balance traffic to the same destination. The feature is enabled by default but the default number of paths is 1. You can increase the number from 2 - 8 paths.
Number of Neighbors Configured	The number of BGP4+ neighbors configured on this device.
Number of Routes Installed	The number of BGP4+ routes in the device's BGP4+ route table.
Number of Routes Advertising to All Neighbors	The total of the RtSent and RtToSend columns for all neighbors.
Number of Attribute Entries Installed	The number of BGP4+ route-attribute entries in the route-attributes table.
Neighbor Address	The IPv6 addresses of this BGP4+ neighbors.
AS#	The autonomous system number.

Output field	Description
State	The state of this neighbor session with each neighbor. The states are from this perspective of the session, not the neighbor's perspective. The state values can be one of the following for each: • IDLE - The BGP4+ process is waiting to be started. Usually, enabling BGP4+ or establishing a neighbor session starts the BGP4+ process. – A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • ADMND - The neighbor has been administratively shut down. – A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • CONNECT - BGP4+ is waiting for the connection process for the TCP neighbor session to be completed. • ACTIVE - BGP4+ is waiting for a TCP connection from the neighbor. **NOTE** If the state frequently changes between CONNECT and ACTIVE, there may be a problem with the TCP connection. • OPEN SENT - BGP4+ is waiting for an Open message from the neighbor. • OPEN CONFIRM - BGP4+ has received an OPEN message from the neighbor and is now waiting for either a KEEPALIVE or NOTIFICATION message. If the receives a KEEPALIVE message from the neighbor, the state changes to Established. If the message is a NOTIFICATION, the state changes to Idle. • ESTABLISHED - BGP4+ is ready to exchange UPDATE packets with the neighbor. – If there is more BGP data in the TCP receiver queue, a plus sign (+) is also displayed. **NOTE** If you display information for the neighbor using the **show ipv6 bgp neighbor***<ipv6-address>* command, the TCP receiver queue value will be greater than 0. **Operational States:** Additional information regarding the operational states of BGP described previously may be added as described in the following: • **(+)** - is displayed if there is more BGP data in the TCP receiver queue. **Note** : If you display information for the neighbor using the **show ip bgp neighbor***ip-addr* command, the TCP receiver queue value will be greater than 0. • **(>)** - indicates that there is more BGP data in the outgoing queue. • **(-)** - indicates that the session has gone down and the software is clearing or removing routes. • **(*)** - indicates that the inbound or outbound policy is being updated for the peer. • (**c)** - indicates that the table entry is clearing. • (**p)** - indicates that the neighbor ribout group membership change is pending or in progress • **(s)** - indicates that the peer has negotiated restart, and the session is in a stale state. • **(r)** - indicates that the peer is restarting the BGP4 connection, through restart. • **(^)** - on the standby MP indicates that the peer is in the ESTABLISHED state and has received restart capability (in the primary MP). • **(<)** - indicates that the device is waiting to receive the "End of RIB" message the peer.
Time	The time that has passed since the state last changed.
Accepted	The number of routes received from the neighbor that this installed in the BGP4+ route table. Usually, this number is lower than the RoutesRcvd number. The difference indicates that this filtered out some of the routes received in the UPDATE messages.

Output field	Description
Filtered	The routes or prefixes that have been filtered out. • If soft reconfiguration is enabled, this field shows how many routes were filtered out (not placed in the BGP4+ route table) but retained in memory. • If soft reconfiguration is not enabled, this field shows the number of BGP4+ routes that have been filtered out.
Sent	The number of BGP4+ routes that the has sent to the neighbor.
ToSend	The number of routes the has queued to send to this neighbor.

Examples

The following example displays sample output from the **show ipv6 bgp summary** command.

```
device> show ipv6 bgp summary

  device> show ipv6 bgp summary
BGP4 Summary
 Router ID: 113.1.1.1   Local AS Number: 65020
 Confederation Identifier: not configured
 Confederation Peers:
 Maximum Number of IP ECMP Paths Supported for Load Sharing: 1
 Number of Neighbors Configured: 2, UP: 1
 Number of Routes Installed: 5, Uses 430 bytes
 Number of Routes Advertising to All Neighbors: 7 (7 entries), Uses 336 bytes
 Number of Attribute Entries Installed: 4, Uses 360 bytes
 Neighbor Address     AS#   State  Time    Rt:Accepted Filtered Sent ToSend
 2001:db8:113:113::2  65001 CONN   1d14h32m       0      0     0      4
 2001:db8:400:400::2  65020 ESTAB  3h59m24s       2      0     3      0
```

show ipv6 cache

Displays IPv6 cache information.

Syntax

show ipv6 cache [**vrf** *vrf-nam*] [*index* | *ipv6-address* | *ipv6-prefix/prefix-length* | **resource** | **ethernet** *stack/slot/port* | **tunnel** *tunnel-id* | **ve** *ve-num*]

Parameters

vrf *vrf-name*

Displays the IPv6 cache information for the specified Virtual Routing/Forwarding (VRF) instance.

index

Restricts the display to the entry for the specified index number and subsequent entries.

ipv6-address

Restricts the display to the entries for the specified IPv6 address. Specify this parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373.

ipv6-prefix/prefix-length

Restricts the display to the entries for the specified IPv6 prefix. Specify the *ipv6-prefix* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. Specify the *prefix-length* parameter as a decimal value. A slash mark (/) must follow the *ipv6-prefix* parameter and precede the *prefix-length* parameter.

resource

Displays the number of entries in the cache.

ethernet *stack/slot/port*

Restricts the display to the entries for the specified Ethernet interface.

tunnel *tunnel-id*

restricts the display to the entries for the specified tunnel interface.

ve *ve-num*

restricts the display to the entries for the specified VE interface.

Modes

User EXEC mode

Command Output

The **show ipv6 cache** command displays the following information:

Output field	Description
Total number of cache entries	The number of entries in the cache table.
IPv6 Address	The host IPv6 address.

Output field	Description
Next Hop	The next hop, which can be one of the following: • Direct - The next hop is directly connected to the router. • Local - The next hop is originated on this router. • IPv6 address - The IPv6 address of the next hop.
Port	The port on which the entry was learned.

Examples

The following example displays the IPv6 cache information.

```
device# show ipv6 cache
Total number of cache entries: 10
   IPv6 Address                    Next Hop         Port
1  2001:DB8::2                     LOCAL            tunnel 2
2  2001:DB8::106                   LOCAL            ethe 1/3/2
3  2001:DB8::110                   DIRECT           ethe 1/3/2
4  2001:DB8:46a::1                 LOCAL            ethe 1/3/2
5  2001:DB8::2e0:52ff:fe99:9737    LOCAL            ethe 1/3/2
6  2001:DB8::ffff:ffff:feff:ffff   LOCAL            loopback 2
7  2001:DB8::c0a8:46a              LOCAL            tunnel 2
8  2001:DB8::c0a8:46a              LOCAL            tunnel 6
9  2001:DB8::1                     LOCAL            loopback 2
10 2001:DB8::2e0:52ff:fe99:9700    LOCAL            ethe 1/3/1
```

show ipv6 dhcp-relay

Displays the DHCPv6 relay agent information configured on the device.

Syntax

show ipv6 dhcp-relay

Modes

User EXEC configuration mode

Command Output

The **show ipv6 dhcp-relay** command displays the following information:

Output field	Description
Current DHCPv6 relay agent state	Displays whether the current relay agent state is enabled or disabled.
DHCPv6 enabled interface(s)	Displays the DHCPv6 enabled interfaces.
DHCPv6 Relay Agent Statistics	Displays statistics such as the total number of DHCPv6 packets received and transmitted.
Received DHCPv6 Packets	The number of release, relay forward and relay reply packets received.

Examples

The following example displays the IPv6 DHCP relay statistics.

```
device(config)> show ipv6 dhcp-relay

Current DHCPv6 relay agent state: Enabled
DHCPv6 enabled interface(s): e 1/1/3
DHCPv6 Relay Agent Statistics:
Total DHCPv6 Packets, Received:0, Transmitted:0
Received DHCPv6 Packets: RELEASE:0,RELAY_FORWARD:0,RELAY_REPLY:0
OtherServertoClient:0,OtherClinettoServer:0
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

show ipv6 dhcp-relay delegated-prefixes

Displays information about the IPv6 delegated prefixes.

Syntax

show ipv6 dhcp-relay delegated-prefixes interface *interface-id*

Parameters

interface *interface-id*

Displays delegated prefixes for the specified outgoing interface.

Modes

Privileged EXEC mode

Command Output

The **show ipv6 dhcp-relay delegated-prefixes** command displays the following information.

Output field	Description
IPv6 Prefix	The IPv6 prefix delegated to the client.
Client	The IPv6 address of the client.
Interface	The interface on which the DHCPv6 messages are relayed to the client.
ExpireTime	The remaining lifetime of the delegated prefix.

Examples

The following example displays information about the delegated prefixes.

```
device# show ipv6 dhcp-relay delegated-prefixes interface ethernet 1/1/45

Prefix                      Client              Interface  ExpireTime
fc00:2000:6:7:1::/96        fe80::210:94ff:fe00:e 1/1/45   29d23h53m0s
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

show ipv6 dhcp-relay destinations

Displays the IPv6 DHCP relay destinations.

Syntax

show ipv6 dhcp-relay destinations

Modes

Global configuration mode

Command Output

The **show ipv6 dhcp-relay destinations** command displays the following information:

Output field	Description
DHCPv6 Relay Destinations	The DHCPv6 relay agent configured destination information.

Examples

The following example displays the IPv6 DHCP relay destinations.

```
device# show ipv6 dhcp-relay destinations
DHCPv6 Relay Destinations:
Interface e 1/2/3:
Destination OutgoingInterface
2001::2 NA
fe80::224:38ff:febb:e3c0 e 1/2/5
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

show ipv6 dhcp-relay interface

Displays the IPv6 DHCP relay information for a specific interface.

Syntax

show ipv6 dhcp-relay interface *stack/slot/port*

Modes

Privileged EXEC mode

Command Output

The **show ipv6 dhcp-relay interface** command displays the following information:

Output field	Description
DHCPv6 Relay Information for *interface interface-type port-num*	The DHCPv6 relay information for the specific interface.
Destination	The configured destination IPv6 address.
OutgoingInterface	The interface on which the packet will be relayed if the destination relay address is a link local or multicast address.
Options	The current information about the DHCPv6 relay options for the interface.
Interface-Id	The interface ID option indicating whether the option is used.
Option-79	Displays if option-79 is used or not.

Examples

The following example displays the DHCPv6 relay information for an interface.

```
device# show ipv6 dhcp-relay interface ethernet 1/1/1

DHCPv6 Relay Information for interface e 1/1/1:
Destinations:
 Destination                   OutgoingInterface
 2001::2                       NA
Options:
 Interface-Id: No     Remote-Id:No        Option-79:Yes
Prefix Delegation Information:
 Current:0 Maximum:100 AdminDistance:10
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.
08.0.40	Support for link-layer-option (option 79) was introduced.

show ipv6 dhcp-relay options

Displays information about the relay options available to the prefixed delegates for a specific interface.

Syntax

show ipv6 dhcp-relay options

Modes

User EXEC mode

Command Output

The **show ipv6 dhcp-relay options** command displays the following information:

Output field	Description
Interface	The interface name.
Interface-Id	The interface ID option. Yes indicates the option is used; No indicates the option is not used.
Remote-Id	The remote ID option. Yes indicates the option is used; No indicates the option is not used.
Option-79	The client link layer option. Yes indicates the option is used, No indicates the option is not used.

Examples

The following example displays relay options information.

```
device> show ipv6 dhcp-relay options

DHCPv6 Relay Options Information:
Interface       Interface-Id     Remote-Id     Option-79
e 1/1/1         No               No              No
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.
08.0.40	Support for link-layer-option was added.

show ipv6 dhcp-relay prefix-delegation-information

Displays information about the IPv6 DHCP prefix delegation.

Syntax

show ipv6 dhcp-relay prefix-delegation-information

Modes

User EXEC mode

Command Output

The **show ipv6 dhcp-relay prefix-delegation-information** command displays the following information:

Output field	Description
Interface	The interface name.
Current	The number of delegated prefixes currently learned on the interface.
Maximum	The maximum number of delegated prefixes that can be learned on the interface.
AdminDistance	The current administrative distance used for prefixes learned on this interface when added to the IPv6 static route table.

Examples

The following example displays information about the IPv6 DHCP delegated prefixes.

```
device> show ipv6 dhcp prefix-delegation-information

DHCPv6 Relay Prefix Delegation Notification Information:
Interface      Current    Maximum     AdminDistance
ve 100          20          20000         10
ve 101         4000         20000         10
ve 102           0          20000         10
ve 103           0          20000         10
ve 104           0          20000         10
ve 105           0          20000         10
```

History

Release version	Command history
08.0.10d	This command was introduced.
08.0.30	Support for this command was added in FastIron 08.0.30 and later releases.

show ipv6 dhcp6-server

Displays IPv6 DHCP server information.

Syntax

show ipv6 dhcp6-server{**global**|**lease**|**pool**[*string*]|**subnet6**[*ipv6-address*]}

Parameters

global
Specifies the DHCPv6 server global parameters.

lease
Specifies DHCPv6 server lease information.

pool
Specifies DHCPv6 server pool configurations.

string
Specifies a DHCPv6 server pool.

subnet6
Specifies DHCPv6 server subnet information.

ipv6-address
Specifies an IPv6 address.

Modes

User EXEC mode

Usage Guidelines

To use this command, you must upgrade to FI 08.0.90 using the Unified FastIron Image (UFI). Refer to the **Software Upgrade and Downgrade** chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

Examples

The following example displays global information for the DHCPv6 server.

```
device> show ipv6 dhcp6-server global

IPV6 DHCP6 SERVER GLOBAL CONFIGURATION SUMMARY:

                          Configuration Status :  enable
                            Preferred lifetime :  1230
                                Valid lifetime :  2000
                              Renewal time(t1%):  0
                               Rebind time(t1%):  700
                             Refresh time(t1%) :  1000
                            Enable Rapid Commit:  No
                                   Domain Name :
                                   DNS Servers :  1234::1
```

The following example displays information about the DHCPv6 server lease entries.

```
device> show ipv6 dhcp6-server lease

IA-NA: Client IP addr: 3ffe:501:ffff:100:dc87:7c42:d4fb:ba7e
Preffered-lifetime: 121
Binding State: active
Valid lifetime : 200
Expires at : 2018/10/09 17:42:42
```

The following example displays information about all the subnets configured on a device. The first subnet, “3efd:320:ddee:202::/64”, has range6 configured as a range of ipv6 addresses. The second subnet, “3ffe:501:ffff:100::/64”, has range6 configured as a prefix.

```
device> show ipv6 dhcp6-server subnet6

******IPV6 DHCP6 SERVER SUBNETS CONFIGURATION SUMMARY *********

-------------------------------------------------

                                       Subnet6 :  3efd:320:ddee:202::/64
                                   Subnet Name :
                               Preferred lifetime :  0
                                   Valid lifetime :  0
                                      Domain Name :
                                    Range6 prefix :  ::/0
                                            Range6:  3efd:320:ddee:202::5
                                                  :  3efd:320:ddee:202::15
                                     DNS Servers:
-------------------------------------------------

                                       Subnet6 :  3ffe:501:ffff:100::/64
                                   Subnet Name :
                               Preferred lifetime :  0
                                   Valid lifetime :  0
                                      Domain Name :
                                    Range6 prefix :  3ffe:501:ffff:100::/64
                                       DNS Servers:
```

The following example displays information about a specific subnet configured on a device.

```
device> show ipv6 dhcp6-server subnet6 3ffe:501:ffff:100::/64

******IPV6 DHCP6 SERVER SUBNETS CONFIGURATION SUMMARY *********
-------------------------------------------------
Subnet6 : 3ffe:501:ffff:100::/64
Subnet Name : testname
Preferred lifetime : 40
Valid lifetime : 100
Domain Name : www.test.com
Range6 prefix : 3ffe:501:ffff:100::/64
Prefix6 : ::/0
DNS Servers:
```

The following example displays information about DHCPv6 server pool configurations.

```
device> show ipv6 dhcp6-server pool

******IPV6 DHCP6 SERVER POOL CONFIGURATION SUMMARY *********

-------------------------------------------------

                                    Pool Name :  dhcp6_pool
                                      Subnet6 :  3ffe:501:ffff:100::/64
                                  Subnet Name :
                               Preferred lifetime :  0
                                   Valid lifetime :  0
                                      Domain Name :
                                    Range6 prefix :
                                            Range6:  3ffe:501:ffff:100::10
                                                  :  3ffe:501:ffff:100::11
                                     DNS Servers:
-------------------------------------------------

                                    Pool Name :  dhcp6_pool
                                      Subnet6 :  6666::/64
                                  Subnet Name :  test
                               Preferred lifetime :  150
                                   Valid lifetime :  300
                                      Domain Name :  www.hcl.com
--More--, next page: Space, next line: Return key, quit: Control-c

        Range6 prefix :
                                            Range6:  6666::16
                                                  :  6666::18
                                     DNS Servers:   1111::5
```

The following example displays configuration information for a specified DHCPv6 server pool.

```
device> show ipv6 dhcp6-server pool dhcp6_pool

******IPV6 DHCP6 SERVER POOL SUMMARY *********

-------------------------------------------------

                                    Pool Name :  dhcp6_pool
                                      Subnet6 :  3ffe:501:ffff:100::/64
                                  Subnet Name :
                               Preferred lifetime :  0
                                   Valid lifetime :  0
                                      Domain Name :
                                    Range6 prefix :
                                            Range6:  3ffe:501:ffff:100::10
                                                  :  3ffe:501:ffff:100::11
                                     DNS Servers:
-------------------------------------------------

                                    Pool Name :  dhcp6_pool
                                      Subnet6 :  6666::/64
                                  Subnet Name :  test
                               Preferred lifetime :  150
                                   Valid lifetime :  300
                                      Domain Name :  www.hcl.com
--More--, next page: Space, next line: Return key, quit: Control-c

           Range6 prefix :
                                            Range6:  6666::16
                                                  :  6666::18
                                     DNS Servers:   1111::5
```

History

Release version	Command history
08.0.90	This command was introduced.
08.0.90b	The **pool**[*string*] option was introduced.

show ipv6 dhcp6 snooping

Displays the DHCPv6 snooping binding database information.

Syntax

show ipv6 dhcp6 snooping

Modes

User EXEC mode

Examples

The following example displays the DHCPv6 snooping information.

```
device> show ipv6 dhcp6 snooping
IPv6 DHCPv6 snooping enabled on 2 VLAN(s):
        VLAN(s): 1 11
```

History

Release version	Command history
08.0.95	The command output was modified to display snooping information for a range of VLANs in one line.

show ipv6 dhcp6 snooping info

Displays DHCPv6 snooping learned entry information.

Syntax

show ipv6 dhcp6 snooping info

Modes

User EXEC mode

Examples

The following example shows the DHCPv6 snooping learned entries.

```
device> show ipv6 dhcp6 snooping info

Dhcp snooping Info
Total Learnt Entries 1
Learnt DHCPv6 Snoop Entries
     IPv6 Address    Mac Address     Valid-Time   Preferred-Time  Port/Lag     Vlan
VRF
     2001::5         00c5.0600.0001  2753         2753            1/2/4        1        default-
vrf
…
```

History

Release version	Command history
08.0.50	This output of this command was modified.
08.0.95	The command output was modified to no longer display virtual port information.. The table output for this command added one additional field, **Preferred-Time**, in the header. The **LinkLayer-Addr** field was changed to **Mac Address**, and the **Age** field was changed to **Valid-Time**. The following lines were also added to the output: **Dhcp snooping Info**, **Total Learnt Entries**, and **Learnt DHCPv6 Snoop Entries**.

show ipv6 dhcp6 snooping vlan

Displays the IPv6 DHCP snooping status on a VLAN.

Syntax

show ipv6 dhcp6 snooping vlan *vlan-name*

Parameters

vlan-name

The name of the VLAN.

Modes

User EXEC mode

Examples

The following example shows the status of DHCPv6 snooping enabled on VLAN 10.

```
device> show ipv6 dhcp6 snooping vlan 10

IPv6 DHCPv6 snooping VLAN 10: Enabled
Trusted Ports: ethernet 1/1/1
Untrusted Ports: ethernet 1/1/2 ethernet 1/1/3
```

show ipv6 fragment-header

Displays information about the current status of the IPv6 fragment header bit.

Syntax

show ipv6 fragment-header

Modes

User EXEC mode

Examples

The following command shows that the virtual LAG specified by LAG ID 2 is not available in the system.

```
device> show ipv6 fragment-header

The fragment header bit ptb icmp is currently set
```

History

Release version	Command history
08.0.61	The command was introduced.

show ipv6 interface

Displays information about the configuration and status of the IP protocol and its services, on all interfaces.

Syntax

show ipv6 interface[**ethernet***unit/slot/port*|**loopback***num* |**tunnel***num* |**ve***num* |**lag***lag-id*]

Parameters

ethernet*unitslotport*

Displays the specified Ethernet interface by unit, slot, and port number.

loopback*num*

Displays the loopback interface number.

tunnel*num*

Displays the tunnel interface number.

ve*num*

Displays the Virtual Ethernet interface number.

lag*lag-id*

Displays the lag number.

Modes

User EXEC mode

Command Output

The **show ipv6 interface** command displays the following information:

Output field	Description
Interface	The type and the slot and port number of the interface.
IP-Address	The IP address of the interface.
OK?	Whether the IP address is configured on the interface.
Method	Whether the IP address is saved in NVRAM. If you have set the IP address for the interface in the CLI, the Method field is "manual".
Status	The link status of the interface. If the user has disabled the interface with the **disable** command, the entry in the 'Status' field is "administratively DOWN". Otherwise, the entry in the 'Status' field is either UP or DOWN.
Protocol	Whether the interface can provide two-way communication. If the IP address is configured and the link status of the interface is up, the entry in the 'Protocol' field is UP. Otherwise, the entry in the 'Protocol' field is DOWN.
VRF	Whether the VRF is configured or set to default.
RA Specific Route Count	The number of configured Route Advertisement (RA) specific routes.

Output field	Description
Preference	Information for configured RA specific routes. • Address: IPv6 prefix address. • Prefix Length: The prefix length. • Lifetime: The configured lifetime. • Preference: The configured router preference. Can be high, medium, or low.

Examples

The following example displays information about all IP interfaces.

```
device# show ipv6 interface

Interface      IP-Address       OK?  Method   Status    Protocol    VRF
Eth mgmt1     10.176.209.185   YES  NVRAM    up      up        default-vrf
```

The following example displays the **show ip interface** command specifically for tunnel interface 2.

```
device(config)#show ipv6 interface tunnel 2
Interface Tunnel 2 is up, line protocol is up
  IPv6 is enabled, link-local address is fe80::ca01:101 [Preferred]
  Global unicast address(es):
    123:1:1::1 [Preferred],  subnet is 123:1:1::/64
  Joined group address(es):
    ff02::1:ff00:1
    ff02::1:ff01:101
    ff02::16
    ff02::d
    ff02::1:ff00:0
    ff02::2
    ff02::1
  Port belongs to VRF: default-vrf
  MTU is 9196 bytes
  TCP adjust-mss: 1200
  ICMP redirects are disabled,  Router preference: Medium
  No Inbound Access List Set
  No Outbound Access List Set
```

The following example displays the IP interface VE configurations.

```
device(config)#show ipv6 interface ve 100
Interface Ve 100  is up, line protocol is up
  vlan id: 100, vlan index: 2, ve type: 1
  members: ethe 2/1/21
  active: ethe 2/1/21
  IPv6 is enabled, link-local address is fe80::923a:72ff:fe05:13f8 [Preferred]
  Global unicast address(es):
    2:1::1 [Preferred],  subnet is 2:1::/64
  Joined group address(es):
    ff02::1:ff00:1
    ff02::1:ff05:13f8
    ff02::16
    ff02::d
    ff02::1:ff00:0
    ff02::2
    ff02::1
  Port belongs to VRF: default-vrf
  MTU is 9216 bytes
  TCP adjust-mss: 1200
  ICMP redirects are disabled,  Router preference: Medium
  ND DAD is enabled, number of DAD attempts: 3
  ND reachable time is 30000 miliseconds
  ND retransmit interval is 1000 miliseconds
  ND advertised reachable time is 0 seconds
  ND advertised retransmit interval is 0 miliseconds
  ND router advertisements are sent every 227 seconds
  ND router advertisements live for 1800 seconds
  Hosts use stateless autoconfig for addresses
  ND Proxy disabled
  Local ND Proxy disabled
  No Inbound Access List Set
  No Outbound Access List Set
```

The following example displays the **show ip interface** command to verify a user-configured MAC address. The “ip-mac:” text is followed by the configured MAC address.

```
device(config)#show ipv6 interface ethernet 2/1/22
Interface e 2/1/22 is up, line protocol is up
  IPv6 is enabled, link-local address is fe80::20a:ff:fe0a:a [Preferred]
  Global unicast address(es):
    1::1 [Preferred],  subnet is 1::/64
  Joined group address(es):
    ff02::1:ff00:1
    ff02::1:ff0a:a
    ff02::16
    ff02::d
    ff02::1:ff00:0
    ff02::2
    ff02::1
  Port belongs to VRF: default-vrf
  MTU is 9216 bytes
  TCP adjust-mss: 1200
  ICMP redirects are disabled,  Router preference: Medium
  ND DAD is enabled, number of DAD attempts: 3
  ND reachable time is 30000 miliseconds
  ND retransmit interval is 1000 miliseconds
  ND advertised reachable time is 0 seconds
  ND advertised retransmit interval is 0 miliseconds
  ND router advertisements are sent every 253 seconds
  ND router advertisements live for 1800 seconds
  Hosts use stateless autoconfig for addresses
  ND Proxy disabled
  Local ND Proxy disabled
  No Inbound Access List Set
  No Outbound Access List Set
  ip-mac: 000a.000a.000a
```

The following example displays the IP interface LAG configurations.

```
device(config)#show ipv6 interface lag 1
Interface lag lg1 is up, line protocol is up
  IPv6 is enabled, link-local address is fe80::923a:72ff:fe05:13f8 [Preferred]
  Global unicast address(es):
    3:1:1::1 [Preferred],  subnet is 3:1:1::/64
  Joined group address(es):
    ff02::1:ff00:1
    ff02::1:ff05:13f8
    ff02::16
    ff02::d
    ff02::1:ff00:0
    ff02::2
    ff02::1
  Port belongs to VRF: default-vrf
  MTU is 9216 bytes
  TCP adjust-mss: 1200
  ICMP redirects are disabled,  Router preference: Medium
  ND DAD is enabled, number of DAD attempts: 3
  ND reachable time is 30000 miliseconds
  ND retransmit interval is 1000 miliseconds
  ND advertised reachable time is 0 seconds
  ND advertised retransmit interval is 0 miliseconds
  ND router advertisements are sent every 332 seconds
  ND router advertisements live for 1800 seconds
  Hosts use stateless autoconfig for addresses
  ND Proxy disabled
  Local ND Proxy disabled
  No Inbound Access List Set
  No Outbound Access List Set
```

The following example displays the IP interface VE configurations including infomration for router advertisement (RA) route information configurations.

```
device> show ipv6 interface ve 300

Interface Ve 300  is up, line protocol is up
…
RA Specific Route Count: 5,
RA Specific Route : Address 3::2000 Prefix Length 120 Lifetime 300 Preference High
RA Specific Route : Address 3::1000 Prefix Length 120 Lifetime 300 Preference High
RA Specific Route : Address 5:503:: Prefix Length 120 Lifetime 120 Preference High
RA Specific Route : Address 5:502:: Prefix Length 120 Lifetime 120 Preference High
RA Specific Route : Address 5:501:: Prefix Length 120 Lifetime 100 Preference Low
```

History

Release version	Command history
08.0.40	The command output was modified to display a user-configured MAC address for an IP interface.
08.0.90	The IP TCP MSS configuration was introduced to this command.
08.0.95C	The command was modified so that information is displayed for router advertisement (RA) route information configurations.

show ipv6 mld group

Displays the list of multicast listening discovery (MLD) groups.

Syntax

show ipv6 mld [**vrf** *vrf-name*] **group** [*ip-address* [**detail** | **tracking**]]

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

group-address

Specifies the IPv6 address of the MLD group.

detail

Displays detailed information on the MLD group identified by the IPv6 address.

tracking

Displays information about who sends the reports.

Modes

User EXEC mode

Command Output

The **show ipv6 mld group** command displays the following information:

Output Field	Description
IDX	Index for the MLD group.
Group Address	IPv6 address of the multicast group.
Port	The physical port to which the group belongs.
Intf	The routing interface to which the port belongs.
GrpCmpV	The version of the MLD group report message.
Mode	Indicates if the filter mode of the multicast group is in INCLUDE or EXCLUDE.
Timer	The number of seconds the interface can remain in its current mode.
Total number of groups	The total number of MLD groups.

Examples

The following example shows MLD statistics.

```
device> show ipv6 mld group
Total 2 groups
------------------------------------------------------------------------------------------
Idx  Group Address                          Port    Intf   GrpCmpV Mode    Timer Srcs
----+---------------------------------------+------+------+-------+-------+-----+----
   1 ff05::4422                             e3/1/1  v170      Ver1 exclude   221   0
   2 ff3f::300                              e3/1/1  v170      Ver2 include     0   1
Total number of groups 2
```

show ipv6 mld interface

Displays multicast listening discovery (MLD) parameters on an interface, including timers, the current querying router, and whether MLD is enabled.

Syntax

show ipv6 mld [**vrf** *vrf-name*] **interface** [**ethernet** *stack/slot/port* | **ve** *ve-num* [**group** *A.B.C.D*] | **tunnel** *tunnel-id*]

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

ethernet *stack/slot/port*

Displays information for a specific Ethernet interface.

ve *num*

Displays nformation for a specific VE interface.

group *A.B.C.D*

Specifies displaying information for a specific group address.

tunnel *tunnel-id*

Displays information for a specific Tunnel interface.

Modes

User EXEC mode

Command Output

The **show ipv6 mld interface** command displays the following information:

Output Field	Description
version	Version of the MLD being used.
query int	Query interval in seconds.
max resp time	Number of seconds multicast groups have to respond to queries.
group mem time	Number of seconds multicast groups can be members of this group before aging out.
(details)	The following is displayed for each interface: • The port ID • The default MLD version being used • The multicast protocol used • IPV6 address of the multicast interface • If the interface has groups, the group source list, IPv6 multicast address, and the filter mode are displayed.

Examples

The following example shows MLD statistics for an interface.

```
device# show ipv6 mld interface
---------+------+---------+-----------------------------------------+--
Intf/Port|Groups| Version |   Querier      | Timer |V1Rtr| Tracking
                |Oper Cfg |  Qrr   GenQ    |             |
---------+------+----+----+-----------------------------------------+--
e1/1/1      0     2    -    Self     0        0     No     Disabled
v40         0     2    -                                    Disabled
e3/1/1      1     2    -    Self     0        0     No
e2/1/1      1     2    -    Self     0        0     No
e1/1/1      1     2    -    Self     0        0     No
v50         0     2    -                                    Disabled
e1/1/2      0     2    -    Self     0        0     No
v220        0     2    -                                    Disabled
e1/1/1      3     2    -    Self     0        12    No
```

The following example shows MLD statistics on an interface for a VRF named my_vrf.

```
device# show ipv6 mld vrf my_vrf interface
---------+------+---------+-----------------------------------------+---------+-----+---------
Intf/Port|Groups| Version |           Querier                       |  Timer  |V1Rtr|Tracking
         |      |Oper  Cfg| OQrr                      GenQ          |         |     |
---------+------+----+----+-----------------------------------------+----+----+-----+---------
v6          0    2    -                                                          Disabled
e1/1/1      2         -    fe80::20c:dbff:fee2:5000   11              0      No
v61         0    2    -                                                          Disabled
e1/1/2      2         -    Self                         0             122    No
```

The following example displays information for the interface VE 4041 group.

```
 device# show ipv6 mld interface ve 4041 group
Total 1 groups
-------------------------------------------------------------------
Idx  Group Address  Port   Intf      GrpCmpV  Mode     Timer Srcs
----+---------------------------------+---------+---------
 1    ff1e::6:1    e1/2/8   v4041     Ver1   exclude  178   0

Total number of groups 1
```

History

Release version	Command history
08.0.50	This command was modified to include the MLD **group** keyword.

show ipv6 mld settings

Displays Multicast Listener Discovery (MLD) settings.

Syntax

show ipv6 mld [**vrf** *vrf-name*] **settings**

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

Modes

User EXEC mode

Command Output

The **show ipv6 mld settings** command displays the following information:

Output Field	Description
Query Interval	How often the router will query an interface for group membership.
Configured Interval	The interval that has been configured for the router.
Max Response Time	The length of time in seconds that the router will wait for an IGMP (V1 or V2) response from an interface before concluding that the group member on that interface is down and removing it from the group.
Group Membership Time	The length of time in seconds that a group will remain active on an interface in the absence of a group report.
Operating Version	The IGMP version operating on the router.
Configured Version	The IGMP version configured on the router.
Robustness Variable	Used to fine-tune for unexpected loss on the subnet. The value is used to calculate the group interval.
Last Member Query Interval	Indicates when a leave is received; a group-specific query is sent. The last member query count is the number of queries with a time interval of Last Member Query Interval (LMQT) sent.
Last Member Query Count	Specifies the number of group-specific queries when a leave is received.
Group/Source Filter Policy	Indicates what ACL is configured as part of Group/Source Filter Policy configurations.

Examples

The following example displays output showing MLD settings for the VRF named my_vrf.

```
device# show ipv6 mld vrf my_vrf settings

MLD Global Configuration
  Query Interval            : 125s   Configured Interval    : 125s
  Max Response Time         : 10s
  Group Membership Time     : 260s
  Operating Version         : 1      Configured Version     : 0
  Robustness Variable       : 2      Operational Value      : 2
  Router Alert Check        : Enabled
  Last Member Query Interval: 1s      Last Member Query Count: 2
  Older Host Present Timer  : 260s
  Maximum Group Address     : 8192
  Group/Source Filter Policy: test1-v6
```

The following example displays output showing MLD settings.

```
device# show ipv6 mld settings

MLD Global Configuration
Query Interval            : 125s   Configured Interval    : 125s
Max Response Time         : 10s
Group Membership Time     : 260s
Operating Version         : 1      Configured Version     : 0
Robustness Variable       : 2
Router Alert Check        : Enabled
Last Member Query Interval: 1s     Last Member Query Count: 2
Older Host Present Timer  : 260s
Maximum Group Address     : 4096
Group/Source Filter Policy : test1-v6
```

History

Release version	Command history
09.0.10	The command output was modified to inlcude information about MLD report filter policies.

show ipv6 mld static

Displays static multicast listening discovery (MLD) groups.

Syntax

show ipv6 mld [**vrf** *vrf-name*] **static**

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

Modes

User EXEC mode

Command Output

The **show ipv6 mld static** command displays the following information:

Output Field	Description
Group Address	The address of the multicast group.
Interface Port List	The physical ports on which the multicast groups are received.

Examples

The following example shows MLD settings for the VRF named my_vrf.

```
device# show ipv6 mld vrf my_vrf static
Group Address                          Interface Port List
---------------------------------------+---------+---------
ff1e:1::1                              v3       ethe 1/2/10
ff1e:a::7f                             v3       ethe 1/2/10
```

show ipv6 mld traffic

Displays information about Multicast Listener Discovery (MLD) traffic.

Syntax

show ipv6 mld [**vrf** *vrf-name*] **traffic**

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

Modes

User EXEC mode

Command Output

The **show ipv6 mld traffic** command displays the following information:

Output Field	Description
QryV1	Number of general MLDv1 queries received or sent by the virtual routing interface.
QryV2	Number of general MLDv2 queries received or sent by the virtual routing interface.
G-Qry	Number of group-specific queries received or sent by the virtual routing interface.
GSQry	Number of source-specific queries received or sent by the virtual routing interface.
MbrV1	Number of MLDv1 membership reports received.
MbrV2	Number of MLDv2 membership reports received.
Leave	Number of MLDv1 "leave" messages on the interface.
Is_IN	Number of source addresses that were included in the traffic.
Is_EX	Number of source addresses that were excluded in the traffic.
ToIN	Number of times the interface mode changed from exclude to include.
ToEX	Number of times the interface mode changed from include to exclude.
ALLOW	Number of times that additional source addresses were allowed or denied on the interface.
BLK	Number of times that sources were removed from an interface.
Filter	Number of MLD Report or Leave messages filtered.
total q_threshold_drop_count:	Counter is displayed when multicast control packets are dropped due to the high rate of multicast control packets received in a short period of time.
total max_group_drop_count	Displays the total number of group reports ignored due to the maximum limit configuration for the **ipv6 mld max-group-address** command.

Examples

The following example displays output showing MLD traffic.

```
device> show ipv6 mld traffic
RECEIVE COUNTERS
Port     QryV1 QryV2 G-Qry GSQry MbrV1 MbrV2 Leave IsIN  IsEX ToIN ToEX ALLO BLK
--------+-----+-----+-----+-----+-----+-----+-----+-----+----+----+----+----+----
e3/1/3      0     0     0     0  9398     0     0     0    0    0    0    0    0
v10         0     0     0     0     0     0     0     0    0    0    0    0    0
*** total: V1 Reports 9398, Errors: xsum 0, group 0, Invalid intf 0
*** total max_group_drop_count: 30986
Filter: Report 47549 Leave 0

TRANSMIT COUNTERS
Port     QryV1 QryV2 G-Qry GSQry
--------+-----+-----+-----+-----
e3/1/3      1     0     0     0
Note: All Counter are reset, if anyone reaches 100000 and above
```

History

Release version	Command history
08.0.90	The output of this command was modified to display the drop counts and the total number of group reports ignored due to the maximum limit configuration for the **ipv6 mld max-group-address** command.
09.0.10	The command output was modified to inlcude information about MLD report filter policy configurations.

show ipv6 mroute

Displays information on IPv6 multicast routes. You can specify displaying information either from static or connected mroutes or from a particular mroute.

Syntax

show ipv6 mroute [**vrf** *vrf-name*] { *ipv6-address ipv6-prefix/prefix-length* | **static** | **connect** | **summary** }

Parameters

vrf *vrf-name*

Specifies displaying mroutes for a particular VRF.

ipv6-address ipv6-prefix/prefix-length

Displays an IPv6 mroute for the specified destination.

static

Displays only static multicast routes.

connect

Displays only connected multicast routes.

summary

Displays summary information.

Modes

Privileged EXEC mode

Examples

The following example displays information for IPv6 multicast routes:

```
Device(config)# show ipv6 mroute
IPv6 Routing Table - 7 entries:
Type Codes - B:BGP C:Connected S:Static
Type IPv6 Prefix           Next Hop Router    Interface     Dis/Metric     Uptime
S    1:1::1:0/120          ::                 ve 90         1/1            2d16h
C    2090::/64             ::                 ve 90         0/0            6d21h
C    2100::/64             ::                 ve 100        0/0            1d21h
C    2110::/64             ::                 ve 110        0/0            1d21h
C    2120::/64             ::                 ve 120        0/0            1d21h
C    2130::/64             ::                 ve 130        0/0            6d21h
C    8811::1/128           ::                 loopback 1    0/0            6d21h
```

The following example displays information for static IPv6 multicast routes:

```
Device(config)# show ipv6 mroute static
Type Codes - B:BGP C:Connected S:Static
Type IPv6 Prefix           Next Hop Router    Interface     Dis/Metric     Uptime
S    1:1::1:0/120          ::                 ve 90         1/1            2d16h
```

The following example displays information for directly attached (connected) IPv6 multicast routes:

```
Device(config)#show ipv6 mroute connect
Type Codes - B:BGP C:Connected S:Static
Type IPv6 Prefix           Next Hop Router    Interface     Dis/Metric     Uptime
C    2090::/64             ::                 ve 90         0/0            6d21h
C    2100::/64             ::                 ve 100        0/0            1d21h
C    2110::/64             ::                 ve 110        0/0            1d21h
C    2120::/64             ::                 ve 120        0/0            1d21h
C    2130::/64             ::                 ve 130        0/0            6d21h
C    8811::1/128           ::                 loopback 1    0/0            6d21h
```

The following example displays information for IPv6 multicast route 2090::1:

```
Device(config)# show ipv6 mroute 2090::1
Type Codes - B:BGP C:Connected S:Static
Type IPv6 Prefix           Next Hop Router    Interface     Dis/Metric     Uptime
C    2090::/64             ::                 ve 90         0/0            6d21h
```

History

Release version	Command history
08.0.10a	This command was introduced.

show ipv6 multicast

Displays IPv6 IGMP snooping information.

Syntax

show ipv6 multicast

Modes

User EXEC mode

Usage Guidelines

You can use the **show ipv6 multicast** command to display information for VLANs.

Examples

The following example shows IGMP snooping information.

```
device# show ipv6 multicast vlan 4050
Version=1, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

VL4050: dft V1, glb cfg passive, , pimsm (glb cfg), 0 grp, 1 (*G) cache, rtr ports,
    router ports: e2/1/6(200) fe80::4050:3, e1/1/4(85) fe80::4050:5,
  My Query address: fe80::ce4e:24ff:fe6f:980 (link-local)
  e1/1/1 has 0 grp, non-QR (QR=fe80::4050:3, age=40), dft V1 trunk
  e1/1/4 has 0 grp, non-QR (passive), dft V1 trunk
  e1/1/41 has 0 grp, non-QR (passive), dft V1 trunk
```

History

Release version	Command history
08.0.50	The output of this command was modified to display the robustness variable and leave-wait timer.

show ipv6 multicast data-plane

Displays IPv6 multicast listening discovery (MLD) data-plane information.

Syntax

show ipv6 multicast data-plane {**mcache** | **mcache-count** | **settings** | **vlan** *vlan-id* }

Parameters

mcache

Specifies the data-plane mcache.

mcache-count

Specifies ithe data-plane mcache count.

settings

Specifies the data-plane MLD snooping settings.

vlan *vlan-id*

Specifies a VLAN.

Modes

User EXEC mode

Command Output

The **show ipv6 multicast data-plane** command displays the following information:

Output Field	Description
in-HW	Indicates if traffic flow is programmed in hardware.
Aging:	Indicates the time remaining (Agebit).
Perm	The static mcache.
Epoch	Indicates the number of times the mcache table reconciled with the Active-CP.
Total Number of v4 DP Mcache Entries	Indicates the total number of data-plane mcache entries.
Insert Failure	Indicates if failure occurred.
Vlan-id	The ID of the VLAN.
snoop	Indicates if IPv6 Multicast snooping is enabled.
pimsmsnoop	Indicates if PIM SM snooping is enabled.
use-sg	0: Use *,G-based forwarding 1: Use S,G-based forwarding
unreg-flood	Indicates if unregistered or unknown multicast flooding is enabled.
Mode	IP or MAC, based on forwarding table used for programming the mcache.
Local Slave Sync State	Name of sync channel used between CP and DP
Local	Indicates if the sync channel is on local unit (value 1) or remote unit.

Output Field	Description
repl user id	User ID.
Init	Indicates the module is initialized.
dysync type	Sync channel ID
alloc	Number of mcache pools that can be allocated.
in-use	Number of mcache pools currently in use.
avail	Number of available mcache pools.
get-fail	Memory get failed counter.
limit	Maximum entires allowed to be allocated dynamically.
get-mem	Memory allocated call counter.
size	Individual entry size.

Examples

The following example shows information for the IPv6 multicast MLD data-plane mcache.

```
device# show ipv6 multicast data-plane mcache

1 (*, 225.0.0.1, 20, 0) -> 0, in-HW: Yes, Aging: 160(0x2), Perm: No, Epoch: 11
Total Number of v4 DP Mcache Entries: 1, Insert Failure: 0
```

The following example shows information for the IPv6 multicast MLD data-plane mcache count.

```
device# show ipv6 multicast data-plane mcache-count

Total Number of v4 DP Mcache Entries: 1, Insert Failure: 0
```

The following example shows information for the IPv6 multicast MLD data-plane for all VLANs.

```
device# show ipv6 multicast data-plane vlan

Summary of all vlans.
Vlan-id:20 snoop:Yes pimsmsnoop:No use-sg:0 unreg-flood:No
Legends:
snoop:Yes -> Multicast snooping is enabled
pimsmsnoop:No - > pimsmsnooping is enabled or not
use-sg: 0: use *,G based forwarding, 1 - use S,G based forwarding
unreg-flood: Unregister/Unknown multicast flooding is enabled or not.
```

The following example shows information for the data-plane MLD snooping settings.

```
device# show ipv6 multicast data-plane settings

Global State:
--------------
Mode :IP Aging :180 Unreg Flood :0
Local Slave Sync State: MSNOOP-DP
----------------------------------------
Local :1 epoc :10 repl user id :3
Init :1 dysync type :46
Resources:
---------------------------
            alloc in-use avail get-fail limit get-mem size init
mcache-pool 128     10    118    0      29696 10      84   128
```

History

Release version	Command history
10.0.00	This command was introduced.

show ipv6 multicast error

Displays information about possible multicast listening discovery (MLD) errors.

Syntax

show ipv6 multicast error

Modes

User EXEC mode

Command Output

The **show ipv6 multicast error** command displays the following information:

Output Field	Description
SW processed pkt	The number of IPv6 multicast packets processed by MLD snooping.
up-time	The MLD snooping up time.

Examples

The following example shows information about possible MLD errors.

```
device> show ipv6 multicast  error

MLD Snoop Resource infromation
Packet Drop:-
   DMAC Error:          0
snoop SW processed pkt: 39, up-time 23:49:40
```

show ipv6 multicast group

Displays information about multicast listening discovery (MLD) groups.

Syntax

show ipv6 multicast group [*group-address* [**detail**] [**tracking**]]

Parameters

group-address

Specifies information for a particular group.

detail

Specifies the source list of a specific VLAN.

tracking

Specifies tracking information on interfaces that have tracking enabled.

Modes

Privileged EXEC mode

Command Output

The **show ipv6 multicast group** command displays the following information:

Output Field	Description
group	The address of the IPv6 group (destination IPv6 address).
p-port	The physical port on which the group membership was received.
ST	**Yes** indicates that the MLD group was configured as a static group; **No** means it was learned from reports.
QR	**Yes** means the port is a querier port; **No** means it is not. A port becomes a non-querier port when it receives a query from a source with a lower source IP address than the port.
life	The number of seconds the group can remain in EXCLUDE mode. An EXCLUDE mode changes to INCLUDE if it does not receive an IS_EX or TO_EX message during a specified period of time. The default is 140 seconds. There is no `life` displayed in INCLUDE mode.
mode	The current mode of the interface: INCLUDE or EXCLUDE. If the interface is in INCLUDE mode, it admits traffic only from the source list. If the interface is in EXCLUDE mode, it denies traffic from the source list and accepts the rest.
source	Identifies the source list that will be included or excluded on the interface. An MLDv1 group is in EXCLUDE mode with a source of 0. The group excludes traffic from 0 (zero) source list, which actually means that all traffic sources are included.

Output Field	Description
group	If you requested a *detailed* report, the following information is displayed: • The multicast group address • The mode of the group • Sources from which traffic will be admitted (INCLUDE) or denied (EXCLUDE) on the interface. • The life of each source list. If you requested a *tracking/fast leave* report, the clients from which reports were received are identified.

Examples

This example shows that an MLDv1 group is in EXCLUDE mode with a source of 0. The group excludes only traffic from the 0 (zero) source list, which means that all traffic sources are included.

```
Device#show ipv6 multicast group
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL1 : 263 grp, 263 grp-port, tracking_enabled
      group                                 p-port ST QR life mode source
1     ff0e::ef00:a0e3                       1/7    N  Y  120  EX   0
2     ff01::1:f123:f567                     1/9    N  Y       IN   1
```

This example displays detailed MLD group information for multicast group ff0e::ef00:a096:

```
Device#show ipv6 multicast group ff0e::ef00:a096 detail
Display group ff0e::ef00:a096 in all interfaces in details.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL1 : 1 grp, 1 grp-port, tracking_enabled
      group                                 p-port ST QR life mode source
1     ff0e::ef00:a096                       1/7    N  Y  100  EX   0
    group: ff0e::ef00:a096, EX, permit 0 (source, life):
      life=100, deny 0:
```

This example displays the list of clients that belong to multicast group ff0e::ef00:a096 when tracking and fast leave are enabled:

```
Device#show ipv6 multicast group ff0e::ef00:a096 tracking
Display group ff0e::ef00:a096 in all interfaces with tracking enabled.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL1 : 1 grp, 1 grp-port, tracking_enabled
      group                                 p-port ST QR life mode source
1     ff0e::ef00:a096                       1/7    N  Y  80   EX   0
    receive reports from 1 clients: (age)
      (2001:DB8::1011:1213:1415 60)
```

show ipv6 multicast group match-last-bits

Displays the groups that share the specified number of lowest bits to match with group address for all VLANs on all ports.

Syntax

show ipv6 multicast group *group-address* **match-last-bits** *decimal*

Parameters

group-address

Specifies information for a particular group.

match-last-bits *decimal*

Specifies the number of lowest bits to match with the group address. Valid values range from 1 through 128. Use 32 to match the same MAC address.

Modes

User EXEC mode

Privileged EXEC mode

Command Output

The **show ipv6 multicast group match-last-bits** command displays the following information:

Output Field	Description
group	The address of the group.
p-port	The physical port on which the group membership was received.
ST	**Yes** indicates that the IGMP group was configured as a static group; **No** means the address was learned from reports.
QR	**Yes** means the port is a querier port; No means it is not. A port becomes a non-querier port when it receives a query from a source with a lower source IP address than the device.
life	The number of seconds the group can remain in EXCLUDE mode. An EXCLUDE mode changes to INCLUDE mode if it does not receive an "IS_EX" or "TO_EX" message during a certain period of time. The default is 260 seconds. There is no life displayed in INCLUDE mode.
mode	Indicates current mode of the interface: INCLUDE or EXCLUDE. If the interface is in INCLUDE mode, it admits traffic only from the source list. If an interface is in EXCLUDE mode, it denies traffic from the source list and accepts the rest.
source	Identifies the source list that will be included or excluded on the interface. For example, if an IGMP V2 group is in EXCLUDE mode with a source of 0, the group excludes traffic from the 0 (zero) source list, which actually means that all traffic sources are included.

Examples

The following example shows the groups that shares the same MAC address with group address for all VLANs on all ports.

```
device# show ipv6 multicast group ff1e::10:1:1 match-last-bits 32
Display groups sharing same mac address 3333.0001.0001 with group ff1e::10:1:1  for all vlans on all
ports.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL4089 : 15 grp, 15 grp-port
      group                                    p-port     ST QR life  mode source
1     ff1e::14:1:1                             e2/1/13    N  N  160   EX   0
2     ff35:1::2:1:1                            e2/1/13    N  N  160   EX   0
3     ff35:1::1:1:1                            e2/1/13    N  N  160   EX   0
4     ff1e::16:1:1                             e2/1/13    N  N  160   EX   0
5     ff1e::18:1:1                             e2/1/13    N  N  160   EX   0
6     ff1e::11:1:1                             e2/1/13    N  N  160   EX   0
7     ff1e::19:1:1                             e2/1/13    N  N  160   EX   0
8     ff1e::10:1:1                             e2/1/13    N  N  160   EX   0
9     ff35:1::3:1:1                            e2/1/13    N  N  160   EX   0
10    ff1e::17:1:1                             e2/1/13    N  N  140   EX   0
11    ff1e::12:1:1                             e2/1/13    N  N  160   EX   0
12    ff1e::15:1:1                             e2/1/13    N  N  160   EX   0
13    ff1e::13:1:1                             e2/1/13    N  N  160   EX   0
14    ff35:1::4:1:1                            e2/1/13    N  N  160   EX   0
15    ff35:1::5:1:1                            e2/1/13    N  N  160   EX   0
```

The following example shows the specified number of lowest bits to match with group address for all VLANs on all ports.

```
device# show ipv6 multicast group ff1e::10:1:1 match-last-bits 35
Display groups with same last 35_bits as ff1e::10:1:1  for all vlans on all ports.
p-:physical, ST:static, QR:querier, EX:exclude, IN:include, Y:yes, N:no
VL4089 : 2 grp, 2 grp-port
      group                                    p-port     ST QR life  mode source
1     ff1e::18:1:1                             e17/2/4    N  Y  160   EX   0
2     ff1e::10:1:1                             e17/2/4    N  Y  160   EX   0
```

History

Release version	Command history
08.0.92	This command was introduced.

show ipv6 multicast mcache

Displays information in the IPv6 multicast forwarding mcache (multicast listening discovery [MLD]).

Syntax

show ipv6 multicast [**cluster**] **mcache** [*group-address* | **vlan** *vlan-id*]

Parameters

cluster

Specifies a Multi-Chassis Trunking (MCT) cluster.

group-address

Specifies the address of the multicast group.

vlan*vlan-id*

Specifies a VLAN.

Modes

User EXEC mode

Command Output

The **show ipv6 multicast mcache** command displays the following information:

Output Field	Description
(source group):	The source and group addresses of this data stream. (* group) means match group only; (source group) means match both. For snooping when it is MAC-based, only *,G entries will be present in multicast mcache output for IPv4 and IPv6. S,G entries will not be present.
cnt	The number of packets processed in software.
OIF	The outgoing interface list.
age	The mcache age in seconds. The mcache is reset to 0 if traffic continues to arrive, otherwise it is aged out when it reaches the time defined by the **ipv6 multicast mcache-age** command.
up-time	The uptime of this mcache in seconds.
l2mc (or ipmc)	The hardware entry which has the list of replication ports. **NOTE** For ICX 7550, ICX 7650, and ICX 7850 devices, **l2mc** is replaced with **ipmc** in the output.
ref-cnt	The number of mcaches using this IPMC.
AgeMask	Stacking unit ID where traffic flow is active (traffic ingression).
HwFailMask	Stacking unit ID where traffic flow is not programmed in the HW. This field is displayed only when there is failure.

Examples

The following example shows information in the multicast forwarding mcache.

```
device> show ipv6 multicast mcache
    (Example:
(S G) (MAC ADDR) cnt=: SRC and GRP IPv4/IPv6 address,
Multicast Mac address, cnt is number of SW processed packets
OIF: 1/1/22 TR(1/1/32,1/1/33), TR is trunk, 1/1/32 primary, 1/1/33 output
IPv6 Multicast Forwarding Mode: IP
Total Multicast Cache: 2
vlan 300, 2 caches.
1 (2001:300::2 ff1e::3337) (3333.0000.3337) cnt=135
OIF: tag lg1
age=16s up-time=143s, change=143s ipmc=360 (ref-cnt=1)
2 (2001:300::2 ff1e::3333) (3333.0000.3333) cnt=129
OIF: tag lg1
age=28s up-time=143s, change=143s ipmc=360 (ref-cnt=1)
```

The following example shows information for the IPv6 multicast forwarding mcache, including information for stacking units where traffic flow is active, or where failure occurred.

```
device> show ipv6 multicast mcache

(S G) (MAC ADDR) cnt=: SRC and GRP IPv4/IPv6 address,
Multicast Mac address, cnt is number of SW processed packets
OIF: 1/1/22 TR(1/1/32,1/1/33), TR is trunk, 1/1/32 primary, 1/1/33 output
IPv6 Multicast Forwarding Mode: IP
Total Multicast Cache: 2
vlan 300, 2 caches.
1 (2001:300::2 ff1e::3337) (3333.0000.3337) cnt=135
OIF: tag lg1
age=16s up-time=143s, change=143s ipmc=360 (ref-cnt=1)
2 (2001:300::2 ff1e::3333) (3333.0000.3333) cnt=129
OIF: tag lg1
age=28s up-time=143s, change=143s ipmc=360 (ref-cnt=1)
```

History

Release version	Command history
08.0.92	The command output was modified.
09.0.00	The command output was modified so that information for entries to the Layer 3 lookup table is displayed.
10.0.00	The output of this command was updated to include information for stacking units where traffic flow is active, or where failure occurred.

show ipv6 multicast optimization

Displays multicast listening discovery (MLD) snooping hardware resource-sharing information.

Syntax

show ipv6 multicast optimization [*ipmc*]

Parameters

ipmc

Specifies the IP multicast (IPMC) group index.

Modes

Privileged EXEC mode

VLAN configuration mode

Usage Guidelines

This command displays the availability of L2MC group indexes in the hardware and how it is used and shared.

The L2MC group index range varies depending on the platform. Values out of range are not displayed.

Examples

The following example displays MLD snooping hardware resource-sharing information.

```
device> show ipv6 multicast optimization

Total ipmcs Allocated: 1; Available: 7832; Failed: 0
Index ipmc SetId Users Set
1 ipmc-360 0xcd13cc38 2 {<lg1>,}
Sharability Coefficient: 100%
```

History

Release version	Command history
08.0.10	This command was introduced.
09.0.00	The command output was modified so that IP multicast information is also displayed.

show ipv6 multicast pimsm-snooping

Displays information related to PIM sparse mode (SM) snooping on the mcache.

Syntax

show ipv6 multicast pimsm-snooping [**vlan** *vlan-id*] [**cache** *ipv6-address*] [**resources**]

Parameters

cache *ipv6-address*

Specifies the PIM SM Snooping cache.

vlan *vlan-id*

Specifies snooping for a VLAN.

resources

Specifies PIM SM snooping resources.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **show ipv6 pimsm-snooping cache** command to display information related to the PIM SM snooping outgoing interface (OIF) in the mcache.

Command Output

The **show ipv6 pimsm-snooping cache** command displays the following information:

Field	Description
VLAN ID	The port-based VLAN to which the following information applies and the number of members in the VLAN.
PIM6 SM Neighbor list	The PIM6 SM routers that are attached to the Layer 2 Switch ports. The value following "expires" indicates how many seconds the Layer 2 Switch will wait for a hello message from the neighbor before determining that the neighbor is no longer present and removing the neighbor from the list.
Multicast Group	The IP address of the multicast group. **NOTE** The fid and camindex values are used by RUCKUS Technical Support for troubleshooting.

Field	Description
Forwarding Port	The ports attached to the group receivers. A port is listed here when it receives a join message for the group, an MLD membership report for the group, or both.
PIMv2 Group Port	The ports on which the Layer 2 Switch has received PIM6 SM join messages for the group.
Source, Port list	The IP address of each PIM6 SM source and the Layer 2 Switch ports connected to the receivers of the source.

Examples

The following example shows PIM SM information for the mcache:

```
Device#show ipv6 multicast pimsm-snooping
Example: Port: 7/3 (ref_count=1)
         ref_count: no of entries in pimsm snoop cache added this oif)

vlan 503, has 1 caches.
1    (* 2:3) has 1 pim join ports out of 1 OIF
     1/1/4 (ref_count=2),
```

show ipv6 multicast resource

Displays information about the software resources used.

Syntax

show ipv6 multicast resource [**vlan** *vlan-num*]

Parameters

vlan *vlan-num*

Displays information for the specified VLAN only.

Modes

User EXEC mode

Command Output

The **show ipv6 multicast resource** command displays the following information:

Output Field	Displays
alloc	The allocated number of units.
in-use	The number of units currently used.
avail	The number of available units.
get-fail	The number of resource failures **NOTE** It is important to pay close attention to this field.
limit	The upper limit of this expandable field. The multicast listening discovery (MLD) group limit is configured using the **system-max mld-snoop-group-addr** command. The snoop mcache entry limit is configured using the **system-max mld-snoop-mcache** command.
get-mem	The current memory allocation. This number should continue to increase.
size	The size of a unit (in bytes).
init	The initial allocated amount of memory. **NOTE** This number can be increased. (More memory can be allocated if necessary.)

Examples

This example shows information about the software resources:

```
device> show ipv6 multicast resource
                     alloc in-use  avail get-fail    limit  get-mem  size init
mld group              512      9    503        0    32000      272    28  256
mld phy port          1024     16   1008        0   200000      279    21 1024
snoop group hash       512      9    503        0    59392      272    20  256
.... Entries deleted
total pool memory 194432 bytes
has total 1 forwarding hash
Available ipmc: 4061
```

show ipv6 multicast traffic

Displays status information for multicast listening discovery (MLD) snooping traffic.

Syntax

show ipv6 multicast traffic

Modes

User EXEC mode

Command Output

The **show ipv6 multicast traffic** command displays the following information:

Output Field	Description
Q	Query
Qry	General Query
QryV1	Number of general MLDv1 queries received or sent.
QryV2	Number of general MLDv2 snooping queries received or sent.
G-Qry	Number of group specific queries received or sent.
GSQry	Number of group source specific queries received or sent.
MBR	The membership report.
MbrV1	The MLDv1 membership report.
MbrV2	The MLDv2 membership report.
IsIN	Number of source addresses that were included in the traffic.
IsEX	Number of source addresses that were excluded in the traffic.
ToIN	Number of times the interface mode changed from EXCLUDE to INCLUDE.
ToEX	Number of times the interface mode changed from INCLUDE to EXCLUDE.
ALLOW	Number of times additional source addresses were allowed on the interface.
BLOCK	Number of times sources were removed from an interface.
Pkt-Err	Number of packets having errors such as checksum errors.

Examples

The following example shows information for MLD snooping traffic.

```
device> show ipv6 multicast traffic

MLD snooping: Total Recv: 32208, Xmit: 166
Q: query, Qry: general Q,  G-Qry: group Q,  GSQry: group-source Q, Mbr: member
Recv      QryV1     QryV2     G-Qry     GSQry     MbrV1     MbrV2     Leave
VL1           0         0         0         0     31744       208       256
VL70          0         0         0         0         0         0         0
Recv       IsIN      IsEX      ToIN      ToEX     ALLOW     BLOCK   Pkt-Err
VL1        1473     31784         0         1         1         7         0
VL70          0         0         0         0         0         0         0
Send      QryV1     QryV2     G-Qry     GSQry     MbrV1     MbrV2
VL1           0         0       166         0         0         0
VL70          0         0         0         0         0         0
```

show ipv6 multicast vlan

Displays multicast listening discovery (MLD) snooping information for all VLANs or for a specific VLAN.

Syntax

show ipv6 multicast vlan *vlan-id*

Parameters

vlan-id

Specifies the VLAN for which you want information. If you do not specify a *vlan-id*, information for all VLANs is displayed.

Modes

User EXEC mode

Command Output

The **show ipv6 multicast vlan** command displays the following information:

Output Field	Description
version	The MLD version number.
query-t	How often a querier sends a general query on the interface.
group-aging-t	Number of seconds membership groups can be members of this group before aging out.
rtr-port	The router ports which are the ports receiving queries. The display router ports: 1/36(120) 2001:DB8::2e0:52ff:fe00:9900 means port 1/36 has a querier with 2001:DB8::2e0:52ff:fe00:9900 as the link-local address, and the remaining life is 120 seconds.
max-resp-t	The maximum number of seconds a client can wait before it replies to the query.
non-QR	Indicates that the port is a non-querier.
QR	Indicates that the port is a querier.
Unregistered IPv6 Multicast Packets Flooding	Indicates whether flooding is enabled.
Multicast Aging Unit Mask	Stacking unit ID where flow is active (traffic ingression).

Examples

The following example shows MLD snooping information for a VLAN.

```
device> show ipv6 multicast vlan
Summary of all vlans. use "sh ipv6 multicast vlan vlan-id" for details
Version=1, Intervals: Query=125, Group Age=260, Max Resp=10, Other Qr=255,
                      Leave Wait=2, Robustness=2

Replication resource sharing: Enabled.
Unregistered IPv6 Multicast Packets Flooding: Disabled
Multicast Aging Unit Mask: 0xa

VL1 no snoop : no local config
VL20: dft V1, glb cfg passive, 0 grp, 0 (*G) cache, no rtr port
VL100 no snoop: PIM on its VE/port
```

History

Release version	Command history
08.0.30	This command was modified to display flooding information.
08.0.50	The output of this command was modified to display the My Query address field.
10.0.00	The output of this command was updated to include information for stacking units where the traffic flow is active.

show ipv6 neighbor

Displays the IPv6 neighbor table, which contains an entry for each IPv6 neighbor with which the router exchanges IPv6 packets.

Syntax

show ipv6 neighbor [**vrf** *vrf-name*] { **ethernet** *stack/slot/port* | **lag** *lag-id* | **ve** *ve-num* } [**dynamic** | **incomplete** | **stale** | **static**]

show ipv6 neighbor [**vrf** *vrf-name*] [*ipv6-address* | *ipv6-prefix/prefix-length* | **dynamic** | **incomplete** | **proxy** | **stale** | **static** | **statistics** | **summary**]

Parameters

vrf *vrf-name*
Specifies a VRF.

ethernet *unit/slot/port*
Specifies an Ethernet interface.

lag *lag-id*
Specifies a LAG interface.

ve *ve-number*
Specifies a Virtual Ethernet (VE) interface.

dynamic
Specifies dynamically learned IPv6 neighbors.

incomplete
Specifies IPv6 neighbors in an incomplete state.

stale
Specifies IPv6 neighbors in a stale state.

static
Specifies statically configured IPv6 neighbors.

ipv6-address
Specifies an IPv6 address, which restricts the display to the entries for the specified IPv6 address.

ipv6-prefix/prefix-length
Specifies an IPv6 prefix, which restricts the display to the entries for the specified IPv6 prefix.

proxy
Specifies IPv6 proxy neighbors.

statistics
Specifies IPv6 neighbor statistics.

summary
Specifies summarized information.

Modes

User EXEC mode

Command Output

The **show ipv6 neighbor** command displays the following information:

Output Field	Description
Total number of Neighbor entries	The total number of entries in the IPv6 neighbor table.
IPv6 Address	The 128-bit IPv6 address of the neighbor.
LinkLayer-Addr	The 48-bit interface ID of the neighbor.
State	The current state of the neighbor. Potential states include: • INCOMPLETE: Address resolution of the entry is being performed. • *REACH : The static forward path to the neighbor is functioning properly. • REACH: The forward path to the neighbor is functioning properly. • STALE: This entry has remained unused for the maximum interval of two hours. While stale, no action takes place until a packet is sent. • DELAY: This entry has remained unused for the maximum interval, and a packet was sent before another interval elapsed. • PROBE: Neighbor solicitations are transmitted until a reachability confirmation is received.
Age	The number of seconds the entry has remained unused. If this value remains unused for the number of seconds specified by the **ipv6 nd reachable-time** command (the default is 30 seconds), the entry is removed from the table.
Port	The physical port on which the entry was learned.
vlan	The VLAN on which the entry was learned.
IsR	Determines if the neighbor is a router or host: • 0 : Indicates that the neighbor is a host. • 1: Indicates that the neighbor is a router.

NOTE

The oldest stale entry will be deleted before the default time interval of two hours if the total number of entries in the neighbor table is equal to the maximum number of neighbor entries when a new entry is trying to be added.

Examples

The following example displays the IPv6 neighbor table.

```
device> show ipv6 neighbor

Total number of Neighbor entries: 3
IPv6 Address              LinkLayer-Addr   State     Age    Port       vlan    IsR
2001:DB8::55              0000.0002.0002   *REACH    0      e 1/3/11   -       0
2000:4::110               0000.0091.bb37    REACH    20     e 1/3/1    5       1
fe80::2e0:52ff:fe91:bb37  0000.0091.bb37    DELAY    1      e 1/3/2    4       1
fe80::2e0:52ff:fe91:bb40  0000.0091.bb40    STALE    5930   e 1/3/3    5       1
```

The following example displays statistical information for IPv6 neighbors.

```
device> show ipv6 neighbor statistics

Neighbor Discovery Statistics:
   Messages/Events sent to ND6 Task(sent/processed):
       Control-Pkt 131/131 Slowpath-Tx 2024/2024 Nbr-Resolve-Req 12/12
       Port-Event 525/525 Addr-Event 264/264 MAC-Event 45/45 ITC-Fail 0
   Neighbor Lifecycle:
       Resolve-Req-Rcvd 7151(R=7139), Resolve-Pkt-Tx 2024, Create-With-LL 11,
       Create-And-Resolve 12, Resolve-Failed 12, Aged-Out 0,
       Probe-Failed 0, Nbr-Cache-Full 0, Dup-Update 0,
       Nbr-Alloc 23, Nbr-Free 23, Nbr-Alloc-Fail 0
   Neighbor Cache Operations:
       Search: If-scope 9312, VRF-scope 2024
       Traversal with key: If 140, VRF 0, All-VRF 0,
                           VLAN 18, Lag 2, Addr 0, Prefix 0
   Neighbor HW Update:
       Egress-Mod 0, State-Mod 42, Neighbor-Del 23, NH-Prog-Err 0
```

The following example displays summarized information for IPv6 neighbors.

```
device> show ipv6 neighbor summary

Global Neighbor Count:
      Max  Total Incomp  Reach  Stale  Delay  Probe
     4096    200      0      0    200      0      0
Interface L Neighbor Count:
      Total Incomp  Reach  Stale  Delay  Probe
v217:
     100      0      0    100      0      0
v218:
     100      0      0    100      0      0
```

The following example displays information for statically configured IPv6 neighbors for an Ethernet interface.

```
device> show ipv6 neighbor interface ethernet 1/1/4 static
     Static:
      Neighbor Entries in VRF: default-vrf
      IPv6 Address              LinkLayer-Addr State  Age    vlan IsR
      fe80::d6c1:9eff:fe18:7bf9 d4c1.9e18.7bf9 STALE  1952   1    1
```

The following example displays information for statically configured IPv6 neighbors for a non-default VRF instance.

```
device> show ipv6 neighbor vrf vrf1 static
     Static:
      Neighbor Entries in VRF: vrf1
      IPv6 Address              LinkLayer-Addr State  Age    Port      vlan IsR
      fe80::d6c1:9eff:fe18:7bf9 d4c1.9e18.7bf9 STALE  1952   e 1/1/3   1    1
```

The following example displays information for dynamically learned IPv6 neighbors for an Ethernet interface.

```
device> show ipv6 neighbor interface ethernet 1/1/4 dynamic
    Dynamic:
      IPv6 Address              LinkLayer-Addr State  Age  vlan IsR
      fe80::d6c1:9eff:fe18:7bf9 d4c1.9e18.7bf9 STALE  1952 1    1
```

The following example displays information for dynamically learned IPv6 neighbors for a non-default VRF instance.

```
device> show ipv6 neighbor vrf vrf1 dynamic
    Dynamic:
      IPv6 Address              LinkLayer-Addr State  Age    Port      vlan IsR
      fe80::d6c1:9eff:fe18:7bf9 d4c1.9e18.7bf9 STALE  1952   e 1/1/3    1    1
```

The following example displays information for IPv6 neighbors in an incomplete state for an Ethernet interface.

```
device> show ipv6 neighbor interface eth 1/1/4 incomplete
    Incomplete State :
      IPv6 Address              LinkLayer-Addr   Age    vlan IsR
      fe80::d6c1:9eff:fe18:7bf9 d4c1.9e18.7bf9   1952   1    1
```

History

Release version	Command history
08.0.95	The **dynamic**, **incomplete**, **stale**, **static**, **statistics**, and **summary** keywords were added.

show ipv6 neighbor inspection

Displays the status of the neighbor discovery (ND) inspection configuration, details of the VLANs on which ND inspection is enabled, ND static entries, and ND inspection statistics.

Syntax

show ipv6 neighbor [**vrf** *vrf-name*] **inspection** [**static-entry** | **statistics** | **vlan** *vlan-number*]

Parameters

static-entry
Specifies the manually configured static ND inspection entries that are used to validate the packets received on untrusted ports.

statistics
Specifies the total number of neighbor discovery messages received and the number of packets discarded after ND inspection.

vlan
Specifies the VLANs on which ND inspection is enabled.

vlan-number
Specifies the ID of the configured VLAN.

vrf
Specifies the VRF instance.

vrf-name
Specifies the ID of the VRF instance.

inspection
Specifies that the neighbor discovery messages are verified against the static ND inspection entries or dynamically learned DHCPv6 snoop entries.

Modes

Privileged EXEC mode

Global configuration mode

VRF configuration mode

Command Output

The **show ipv6 neighbor inspection** command displays the following information.

Output field	Description
VLAN	The list of VLANs on which ND inspection is enabled.
IPv6 Address	The IPv6 addresses of the hosts that are added as static ND inspection entries.
LinkLayer-Addr	The MAC addresses of the hosts that are added as static ND inspection entries.
Total number of ND Solicit received	The total number of neighbor solicitation messages received.
Total number of ND Advert received	The total number of neighbor advertisement messages received.

Output field	Description
Total number of Router Solicit received	The total number of router solicitation messages received.
Total number of ND dropped	The total number of neighbor discovery messages that are discarded because of the IP-to-MAC address binding discrepancy.
IPv6 Neighbor inspection VLAN *vlan-number*	The status of ND inspection on a VLAN.
Untrusted Ports	The interfaces or member ports on which trust mode is not enabled.
Trusted Ports	The interfaces or member ports on which trust mode is enabled.

Examples

The following example shows the output of the **show ipv6 neighbor inspection** command.

```
device(config)# show ipv6 neighbor inspection
IPv6 Neighbor inspection enabled on 2 VLAN(s):
        VLAN: 2
        VLAN: 3
```

The following example shows the output of the ND inspection configuration details for a VRF.

```
device(config-vrf-3)# show ipv6 neighbor vrf 3 inspection
IPv6 Neighbor inspection enabled on 2 VLAN(s):
        VLAN: 2
        VLAN: 3
```

The following example shows the output of the **show ipv6 neighbor inspection static-entry** command.

```
device(config)# show ipv6 neighbor inspection static-entry
 Total number of ND Inspect entries: 3
 IPv6 Address                           LinkLayer-Addr
 2001::1                                0000.0000.1234
 2001::3                                0000.1234.4567
 2001::2                                0000.0000.4567
```

The following example shows the ND static entries of a VRF.

```
device(config-vrf-3)# show ipv6 neighbor vrf 3 inspection static-entry
 Total number of ND Inspect entries: 1
 IPv6 Address                           LinkLayer-Addr
 2001:201:1:1::34                        cc4e.246d.2038
```

The following example shows the output of the **show ipv6 neighbor inspection statistics** command.

```
device(config)# show ipv6 neighbor inspection statistics
Total number of ND Solicit received      11
Total number of ND Advert received      29
Total number of Router Solicit received  20
Total number of ND dropped               6
```

The following example shows the ND inspection statistics of a VRF.

```
device(config-vrf-3)# show ipv6 neighbor vrf 3 inspection statistics
Total number of ND Solicit received      11
Total number of ND Advert received      29
Total number of Router Solicit received  20
Total number of ND dropped               6
```

The following example shows the output of the **show ipv6 neighbor inspection vlan** *vlan-number* command.

```
device (config)# show ipv6 neighbor inspection vlan 2
IPv6 Neighbor inspection VLAN 2: Enabled
  Untrusted Ports : ethe 1/1/1 to 1/1/2
  Trusted Ports : ethe 1/1/3
```

The following example shows the details of the VLANs on which ND inspection is enabled for a VRF.

```
device (config-vrf-3)# show ipv6 neighbor vrf 3 inspection vlan 2
IPv6 Neighbor inspection VLAN 2: Enabled
  Untrusted Ports : ethe 1/1/1 to 1/1/2
  Trusted Ports : ethe 1/1/3
```

History

Release version	Command history
08.0.20	This command was introduced.

show ipv6 ospf

Displays OSPFv3 information.

Syntax

show ipv6 ospf

Modes

User EXEC mode

Examples

The following example displays sample output from the **show ipv6 ospf** command.

```
device> show ipv6 ospf

OSPFv3 Process number 0 with Router ID 0xc0a862d5(10.168.98.213)
Running 0 days 2 hours 55 minutes 36 seconds
Number of AS scoped LSAs is 4
Sum of AS scoped LSAs Checksum is 18565
External LSA Limit is 250000
Database Overflow Interval is 10
Database Overflow State is NOT OVERFLOWED
Route calculation executed 15 times
Pending outgoing LSA count 0
Authentication key rollover interval 300 seconds
Number of areas in this router is 3
Router is operating as ABR
Router is operating as ASBR, Redistribute: CONNECTED RIP
High Priority Message Queue Full count: 0
Graceful restart helper is enabled, strict lsa checking is disabled
Nonstop-routing is ENABLED
```

The following example displays sample output from the **show ipv6 ospf** command including information about the maximum number of LSAs in the LSDB and the device configurations for checking the overflow state.

```
device> show ipv6 ospf

OSPFv3 Process number                    0
 Router ID                                2.2.2.2 (0x2020202)
 Running                                  0 days 1 hours 39 minutes 8 seconds
 Sum of AS scoped LSAs Checksum           0
 LSDB Limit                               40
 LSDB Overload Interval                   60 seconds
 LSDB Overload Frequency                  36
 LSDB Overload Check timer running        YES
 LSDB Overload timer running              NO
 LSDB Overload State                      NO OVERFLOW
 External LSA Limit                       40
 External Database Overflow Interval      600 seconds
 External LSDB Overflow timer running     NO
 External Database Overflow State         NO OVERFLOW
 Route calculation executed times         3
 Pending outgoing LSA count               0
 Authentication key rollover interval     300 seconds
 Number of areas in this router           2
 High Priority Message Queue Full count   0
 Medium Priority Message Queue Full count 0
 BFD is disabled
 Graceful restart helper                  enabled
 Strict lsa checking                      disabled
 Nonstop Routing                          enabled
 Total Keychain events received           0
```

History

Release version	Command history
08.0.95	This command output was modified to include extra information about the maximum number of link state advertisements in the LSDB and the device configurations for checking the overflow state.

show ipv6 ospf area

Displays the OSPFv3 area table in a specified format.

Syntax

show ipv6 ospf area [*A.B.C.D*] [*decimal*]

Parameters

A.B.C.D

Area address in dotted decimal format.

decimal

Area address in decimal format.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf area** command displays the following information:

Output field	Description
Area	The area number.
Interface attached to this area	The device interfaces attached to the area.
Number of Area scoped LSAs is *N*	Number of LSAs (*N*) with a scope of the specified area.
SPF algorithm executed is *N*	The number of times (*N*) the OSPF Shortest Path First (SPF) algorithm is executed within the area.
SPF last updated	The interval in seconds that the SPF algorithm was last executed within the area.
Current SPF node count	The current number of SPF nodes in the area.
Router	Number of router LSAs in the area.
Network	Number of network LSAs in the area.
Indx	The row number of the entry in the routers's OSPF area table.
Statistics of Area	The number of the area whose statistics are displayed.
Maximum hop count to nodes.	The maximum number of hop counts to an SPF node within the area.

Examples

The following example shows sample output from the **show ipv6 ospf area** command when an area is specified.

```
device> show ipv6 ospf area 400
Area 400:
  Authentication: Not Configured
  Active interface(s)attached to this area: None
  Inactive interface(s)attached to this area: ve 20  ve 30
  Number of Area scoped LSAs is 311
  Sum of Area LSAs Checksum is 9e8fff
  Statistics of Area 400:
    SPF algorithm executed 10 times
    SPF last updated: 5920 sec ago
    Current SPF node count: 1
      Router: 1 Network: 0
      Maximum of Hop count to nodes: 0
```

show ipv6 ospf database

Displays lists of information about different OSPFv3 link-state advertisements (LSAs).

Syntax

show ipv6 ospf database [**advrtr** *A.B.C.D* | **extensive** | **link-id** *decimal* | **prefix** *ipv6-addr*]

show ipv6 ospf database [**as-external** | **inter-prefix** | **inter-router** | **intra-prefix** | **link** [*decimal*] | **network** | **router** | **type-7**] [**advrtr** *A.B.C.D* | **link-id** *decimal*]

show ipv6 ospf database scope { **area** { *A.B.C.D* | *decimal* } | **as** | **link** }

show ipv6 ospf database summary

Parameters

advrtr *A.B.C.D*
Displays LSAs by Advertising Router Id in dotted decimal format.

extensive
Displays detailed lists of LSA information.

link-id *decimal*
Link-state ID that differentiates LSAs. Valid values range from 1 through 4294967295.

prefix
Display LSAs that contain a prefix.

ipv6-addr
Specifies an IPv6 address.

as-external
Displays information about external LSAs.

inter-prefix
Displays information about inter area prefix LSAs.

inter-router
Displays information about inter area router LSAs.

intra-prefix
Displays information about intra area prefix LSAs.

link *decimal*
Displays information about the link LSAs.

network
Displays information about network LSAs.

router
Displays information about router LSAs.

type-7
Displays information about the not so stubby area (NSSA) external LSAs.

scope

Displays LSA information by LSA scope.

area

Displays LSAs by scope within a specified area.

as

Displays autonomous system (AS) LSAs by scope.

link

Displays link LSAs by scope.

summary

Displays LSA summary information.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf database** command displays the following information:

Output field	Description
Area ID	The OSPF area in which the device resides.
Type	Type of LSA. LSA types can be the following: • Rtr - Router LSAs (Type 1). • Net - Network LSAs (Type 2). • Inap - Inter-area prefix LSAs for ABRs (Type 3). • Inar - Inter-area router LSAs for ASBRs (Type 4). • Extn - AS external LSAs (Type 5). • Link - Link LSAs (Type 8). • Iap - Intra-area prefix LSAs (Type 9).
LS ID	The ID of LSA in Decimal.
Adv Rtr	The device that advertised the route.
Seq(Hex)	The sequence number of the LSA. The OSPF neighbor that sent the LSA stamps it with a sequence number to enable the device and other OSPF routers to determine which LSA for a given route is the most recent.
Age	The age of the LSA, in seconds.
Chksum	A checksum for the LSA packet. The checksum is based on all the fields in the packet except the age field. The device uses the checksum to verify that the packet is not corrupted.
Len	The length, in bytes, of the LSA.
Sync	Sync status with the slave management processor (MP).

The **show ipv6 ospf database extensive** command displays the following information:

Output field	Description
Router LSA (Type 1) (Rtr) Fields	

Output field	Description
Capability Bits	A bit that indicates the capability of the device. The bit can be set to one of the following: B - The device is an area border router. E - The device is an AS boundary router. V - The device is a virtual link endpoint. W - The device is a wildcard multicast receiver.
Options	A 24-bit field that enables IPv6 OSPF routers to support the optional capabilities. When set, the following bits indicate the following: V6 - The device should be included in IPv6 routing calculations. E - The device floods AS-external-LSAs as described in RFC 2740. MC - The device forwards multicast packets as described in RFC 1586. N - The device handles type 7 LSAs as described in RFC 1584. R - The originator is an active router. DC -The device handles demand circuits.
Type	The type of interface. Possible types can be the following: Point-to-point - A point-to-point connection to another router. Transit - A connection to a transit network. Virtual link - A connection to a virtual link.
Metric	The cost of using this router interface for outbound traffic.
Interface ID	The ID assigned to the router interface.
Neighbor Interface ID	The interface ID that the neighboring router has been advertising in hello packets sent on the attached link.
Neighbor Router ID	The router ID (IPv4 address) of the neighboring router that advertised the route. (By default, the router ID is the IPv4 address configured on the lowest numbered loopback interface. If the device does not have a loopback interface, the default router ID is the lowest numbered IPv4 address configured on the device.)
Network LSA (Type 2) (Net) Fields	
Options	A 24-bit field that enables IPv6 OSPF routers to support the optional capabilities. When set, the following bits indicate the following: V6 - The device should be included in IPv6 routing calculations. E - The device floods AS-external-LSAs as described in RFC 2740. MC - The device forwards multicast packets as described in RFC 1586. N - The device handles type 7 LSAs as described in RFC 1584. R - The originator is an active router. DC -The device handles demand circuits.
Attached Router	The address of the neighboring router that advertised the route.
Inter-Area Prefix LSA (Type 3) (Inap) Fields	
Metric	The cost of the route.
Prefix Options	An 8-bit field describing various capabilities associated with the prefix.
Prefix	The IPv6 prefix included in the LSA.
Inter-Area Router LSA (Type 4) (Inar) Fields	

Output field	Description
Options	A 24-bit field that enables IPv6 OSPF routers to support the optional capabilities. When set, the following bits indicate the following: V6 - The device should be included in IPv6 routing calculations. E - The device floods AS-external-LSAs as described in RFC 2740. MC - The device forwards multicast packets as described in RFC 1586. N - The device handles type 7 LSAs as described in RFC 1584. R - The originator is an active router. DC -The device handles demand circuits.
Metric	The cost of the route.
Destination Router ID	The ID of the router described in the LSA.
AS External LSA (Type 5) (Extn) Fields	
Bits	The bit can be set to one of the following: • E - If bit E is set, a Type 2 external metric. If bit E is zero, a Type 1 external metric. • F - A forwarding address is included in the LSA. • T - An external route tag is included in the LSA.
Metric	The cost of this route, which depends on bit E.
Prefix Options	An 8-bit field describing various capabilities associated with the prefix.
Referenced LS Type	If non-zero, an LSA with this LS type is associated with the LSA.
Prefix	The IPv6 prefix included in the LSA.
Link LSA (Type 8) (Link) Fields	
Router Priority	The router priority of the interface attaching the originating router to the link.
Options	The set of options bits that the router would like set in the network LSA that will be originated for the link.
Link Local Address	The originating router's link-local interface address on the link.
Number of Prefix	The number of IPv6 address prefixes contained in the LSA.
Prefix Options	An 8-bit field of capabilities that serve as input to various routing calculations: • NU - The prefix is excluded from IPv6 unicast calculations. • LA - The prefix is an IPv6 interface address of the advertising router. • MC - The prefix is included in IPv6 multicast routing calculations. • P - NSSA area prefixes are readvertised at the NSSA area border.
Prefix	The IPv6 prefix included in the LSA.
Intra-Area Prefix LSAs (Type 9) (Iap) Fields	
Number of Prefix	The number of prefixes included in the LSA.
Referenced LS Type, Referenced LS ID	Identifies the router-LSA or network-LSA with which the IPv6 address prefixes are associated.
Referenced Advertising Router	The address of the neighboring router that advertised the route.
Prefix Options	An 8-bit field describing various capabilities associated with the prefix.
Metric	The cost of using the advertised prefix.
Prefix	The IPv6 prefix included in the LSA.
Number of Prefix	The number of prefixes included in the LSA.

Examples

The following example shows sample output from the **show ipv6 ospf database** command.

```
device> show ipv6 ospf database

LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID         Type LSID       Adv Rtr         Seq(Hex) Age  Cksum Len   Sync
0.0.0.200       Link 897        192.168.98.213  80000007 1277 9044  64    Yes
0.0.0.200       Link 136        192.168.98.111  80000007 582  fb0b  64    Yes
0.0.0.200       Link 2049       192.168.98.213  80000006 1277 381a  64    Yes
0.0.0.200       Link 1156       192.168.98.111  80000007 582  cf38  64    Yes
0.0.0.200       Link 2052       192.168.98.213  80000004 799  5b06  64    Yes
0.0.0.200       Rtr  0          192.168.98.111  800002ea 823  cb7b  56    Yes
0.0.0.200       Rtr  0          192.168.98.213  800001c7 799  8402  56    Yes
0.0.0.200       Net  1156       192.168.98.111  80000004 823  b2d2  32    Yes
0.0.0.200       Net  136        192.168.98.111  80000008 823  aed2  32    Yes
N/A             Extn 0000021d   10.223.223.223     800000a8 1319 441e  32       Yes
```

The following example shows sample output from the **show ipv6 ospf database** command when the **advr** keyword is used.

```
device> show ipv6 ospf database advr 192.168.98.111

LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID         Type LSID       Adv Rtr         Seq(Hex) Age  Cksum Len   Sync
0.0.0.200       Link 136        192.168.98.111  80000007 634  fb0b  64    Yes
     Router Priority: 1
     Options: V6E---R--
     LinkLocal Address: fe80::768e:f8ff:fe3e:1800
     Number of Prefix: 1
     Prefix Options:
     Prefix: 5100::193:213:111:0/112
```

The following example shows sample output from the **show ipv6 ospf database** command when the **as-external** keyword is used.

```
device> show ipv6 ospf database as-external

LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID         Type LSID       Adv Rtr         Seq(Hex) Age  Cksum Len   Sync
N/A             Extn 2          192.168.98.213  80000004 895  6e5e  44    Yes
     Bits: E--
     Metric: 0
     Prefix Options:
     Referenced LSType: 0
     Prefix: 5100:213:213:0:192:213:1:0/112
LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID         Type LSID       Adv Rtr         Seq(Hex) Age  Cksum Len   Sync
N/A             Extn 1          192.168.98.190  80001394 643  1cc9  28    Yes
     Bits: E--
     Metric: 1
     Prefix Options:
     Referenced LSType: 0
     Prefix: ::/0
LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID         Type LSID       Adv Rtr         Seq(Hex) Age  Cksum Len   Sync
N/A             Extn 2          192.168.98.71   80000258 132  a3ff  32    Yes
     Bits: E-T
     Metric: 1
     Prefix Options:
     Referenced LSType: 0
     Prefix: ::/0
     Tag: 1
```

The following example shows sample output from the **show ipv6 ospf database** command when the **extensive** keyword is used.

```
device> show ipv6 ospf database extensive

LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID      Type LS ID    Adv Rtr         Seq(Hex) Age  Cksum Len  Sync
0.0.0.200    Link 897      192.168.98.213  80000007 1432 9044  64    Yes
     Router Priority: 1
     Options: V6E---R--
     LinkLocal Address: fe80::214:ff:fe77:96ff
     Number of Prefix: 1
     Prefix Options:
     Prefix: 5100::193:213:111:0/112
LSA Key - Rtr:Router Net:Network Inap:InterPrefix Inar:InterRouter
          Extn:ASExternal Grp:GroupMembership Typ7:Type7 Link:Link
          Iap:IntraPrefix Grc:Grace
Area ID      Type LSID     Adv Rtr         Seq(Hex) Age  Cksum Len   Sync
0.0.0.200    Link 136      192.168.98.111  80000007 737  fb0b  64    Yes
     Router Priority: 1
     Options: V6E---R--
     LinkLocal Address: fe80::768e:f8ff:fe3e:1800
--More--, next page: Space, next line: Return key, quit: Control-c
```

show ipv6 ospf interface

Displays interface information for all or specific OSPFv3-enabled interfaces.

Syntax

show ipv6 ospf interface [**brief**] [**ethernet** *unit/slot/port*] [**loopback** *number*] [**tunnel** *number*] [**ve** *vlan_id*]

Parameters

brief

Displays brief summary information about OSPFv3-enabled interfaces.

ethernet *unit/slot/port*

Specifies the physical interface. On standalone devices as well as stacked devices specifies the interface ID in the format unit/slot/port. On standalone devices, "1" is the unit number.

loopback *number*

Specifies a loopback port number in the range of 1 to 255.

tunnel *number*

Specifies a tunnel interface.

ve *vlan_id*

Specifies the VLAN number.

Modes

Privileged EXEC mode

Usage Guidelines

Use the **brief** keyword to limit the display to the following fields:

- Interface
- Area
- Status
- Type
- Cost
- State
- Nbrs(F/C)

Command Output

The **show ipv6 ospf interface** command displays the following information:

This field	Displays
Interface status	The status of the interface. Possible status includes the following: • Up. • Down.
Type	The type of OSPFv3 circuit running on the interface. Possible types include the following: • BROADCAST • POINT TO POINT UNKNOWN • POINT TO POINT
IPv6 Address	The IPv6 address assigned to the interface.
Instance ID	An identifier for an instance of OSPFv3.
Router ID	The IPv4 address of the device. By default, the router ID is the IPv4 address configured on the lowest numbered loopback interface. If the device does not have a loopback interface, the default router ID is the lowest numbered IPv4 address configured on the device.
Area ID	The IPv4 address or numerical value of the area in which the interface belongs.
Cost	The overhead required to send a packet through the interface.
Interface bandwidth	The configured bandwidth on a tunnel interface for routing metric purposes only.
default	Shows whether or not the default passive state is set.
State	The state of the interface. Possible states include the following: • DR - The interface is functioning as the Designated Router for OSPFv3. • BDR - The interface is functioning as the Backup Designated Router for OSPFv3. • Loopback - The interface is functioning as a loopback interface. • P2P - The interface is functioning as a point-to-point interface. • Passive - The interface is up but it does not take part in forming an adjacency. • Waiting - The interface is trying to determine the identity of the BDR for the network. • None - The interface does not take part in the OSPF interface state machine. • Down - The interface is unusable. No protocol traffic can be sent or received on such a interface. • DR other - The interface is a broadcast or NBMA network on which another router is selected to be the DR. • Active - The interface sends or receives all the OSPFv3 control packets, and forms the adjacency.
Transmit delay	The amount of time, in seconds, it takes to transmit Link State Updates packets on the interface.
Priority	The priority used when selecting the DR and the BDR. If the priority is 0, the interface does not participate in the DR and BDR election.
Timer intervals	The interval, in seconds, of the hello-interval, dead-interval, and retransmit-interval timers.
DR	The router ID (IPv4 address) of the DR.
BDR	The router ID (IPv4 address) of the BDR.
Number of I/F scoped LSAs	The number of interface LSAs scoped for a specified area, AS, or link.
DR Election	The number of times the DR election occurred.

This field	Displays
Delayed LSA Ack	The number of the times the interface sent a delayed LSA acknowledgement.
Neighbor Count	The number of neighbors to which the interface is connected.
Adjacent Neighbor Count	The number of neighbors with which the interface has formed an active adjacency.
Neighbor	The router ID (IPv4 address) of the neighbor. This field also identifies the neighbor as a DR or BDR, if appropriate.
Interface statistics	The following statistics are provided for the interface: • Unknown - The number of Unknown packets transmitted and received by the interface. Also, the total number of bytes associated with transmitted and received Unknown packets. • Hello - The number of Hello packets transmitted and received by the interface. Also, the total number of bytes associated with transmitted and received Hello packets. • DbDesc - The number of Database Description packets transmitted and received by the interface. Also, the total number of bytes associated with transmitted and received Database Description packets. • LSReq - The number of link-state requests transmitted and received by the interface. Also, the total number of bytes associated with transmitted and received link-state requests. • LSUpdate - The number of link-state updates transmitted and received by the interface. Also, the total number of bytes associated with transmitted and received link-state requests. • LSAck - The number of link-state acknowledgements transmitted and received by the interface. Also, the total number of bytes associated with transmitted and received link-state acknowledgements.

Examples

This example shows sample output from the **show ipv6 ospf interface** command when no arguments or keywords are used.

```
device# show ipv6 ospf interface

e 1/1/9 admin up, oper up, IPv6 enabled
  IPv6 Address:
      fe80::224:10ff:fe76:4bc0
      201::1/64
  Instance ID 0, Router ID 2.2.2.2
  Area ID 0, Cost 1, Type BROADCAST
  MTU: 1500
  State DR, Transmit Delay 1 sec, Priority 1, Link-LSA Tx not suppressed
  Timer intervals :
    Hello 10, Hello Jitter 10  Dead 40, Retransmit 5
  Authentication Use: Enabled
   KeyRolloverTime(sec): Configured: 300 Current: 0
   KeyRolloverState: NotActive
   Outbound: None
   Inbound: None
  DR:2.2.2.2 BDR:1.1.1.1  Number of I/F scoped LSAs is 2
  DRElection:     2 times, DelayedLSAck:   425 times
  Neighbor Count = 1,   Adjacent Neighbor Count= 1
     Neighbor:
      1.1.1.1 (BDR)
    Statistics of interface e 1/1/9:
      Type     tx         rx         tx-byte    rx-byte
      Unknown  0          0          0          0
      Hello    80035      80133      3201392    3205320
      DbDesc   5          3          240        144
      LSReq    1          1          28         76
      LSUpdate 2095       1262       171228     92540
      LSAck    425        419        32020      48604
      OSPF messages dropped,no authentication: 0
```

This example shows sample output from the **show ipv6 ospf interface** command when the **brief** keyword is used.

```
device# show ipv6 ospf interface brief
Interface     Area        Status Type Cost  State    Nbrs(F/C)
e 1/1/9       0           up     BCST 1     DR       1/1
e 1/1/12      0           down   BCST 0     Down     0/0
ve 20         0           up     BCST 1     DR       0/0
ve 60         0           up     BCST 1     DR       0/0
ve 310        0           down   BCST 0     Down     0/0
ve 360        0           down   BCST 0     Down     0/0
loopback 1    0           up     BCST 1     Loopback 0/0
loopback 2    0           up     BCST 1     Loopback 0/0
loopback 3    0           up     BCST 1     Loopback 0/0
```

This example shows information about a specified OSPF-enabled Ethernet interface, including the cost, where the cost is calculated using the default interface speed and auto cost.

```
device# show ipv6 ospf interface ethernet 3/1/1

     e 3/1/1 admin up, oper up, ospf enabled, state up
     fe80::224:10ff:fe76:4bc0
      201::1/64,
     Area 0
     Database Filter: Not Configured
     State BDR, Pri 1, Cost 1, Options 2, Type broadcast Events 3
```

This example shows information about a specified OSPF-enabled Ethernet interface, including the cost, which has been calculated using the configured interface bandwidth and the default auto-cost.

```
device# show ipv6 ospf interface ethernet 3/1/1

     e 1/1/3 admin up, oper up, IPv6 enabled
  IPv6 Address:
      fe80::ce4e:24ff:fe6d:bc00
      9000:1111:9013::2/64
  Instance ID 0, Router ID 192.168.3.1
  Area ID 0, Cost 34, Type BROADCAST
  MTU: 1500
  State DR, Transmit Delay 1 sec, Priority 1, Link-LSA Tx not suppressed
  Timer intervals :
    Hello 10, Hello Jitter 10  Dead 40, Retransmit 5
  Authentication Use: Enabled
   KeyRolloverTime(sec): Configured: 300 Current: 0
   KeyRolloverState: Not Active
   Outbound: None
   Inbound: None
  DR:192.168.3.1 BDR:192.168.1.1  Number of I/F scoped LSAs is 2
  DRElection:     2 times, DelayedLSAck:     1 times
  Neighbor Count = 1,   Adjacent Neighbor Count= 1
     Neighbor:
      192.168.1.1 (BDR)
    Statistics of interface e 1/1/3:
      Type     tx         rx         tx-byte    rx-byte
      Unknown  0          0          0          0
      Hello    82         78         3268       3120
      DbDesc   2          3          116        304
      LSReq    1          1          148        28
      LSUpdate 16         7          1144       1048
      LSAck    1          3          156        328
      OSPF messages dropped, no authentication: 0
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.

show ipv6 ospf memory

Displays information about OSPFv3 memory usage.

Syntax

show ipv6 ospf memory

Modes

User EXEC mode

Command Output

The **show ipv6 ospf memory** command displays the following information:

Output field	Description
Total Dynamic Memory Allocated	A summary of the amount of dynamic memory allocated, in bytes, to OSPFv3.
Memory Type	The type of memory used by OSPFv3. (This information is for use by RUCKUS technical support in case of a problem.)
Size	The size of a memory type.
Allocated	The amount of memory currently allocated to a memory type.
Max-alloc	The maximum amount of memory that was allocated to a memory type.
Alloc-Fails	The number of times an attempt to allocate memory to a memory type failed.
Global memory pool for all instances	A summary of the amount of memory allocated from heap.

Examples

The following is sample output from the **show ipv6 ospf memory** command.

```
device> show ipv6 ospf memory

Total Dynamic Memory Allocated for this instance : 4296579 bytes
   Memory Type               Size       Allocated  Max-alloc  Alloc-Fails
   MTYPE_OSPF6_AREA          471191     1          4          0
   MTYPE_OSPF6_AREA_RANGE    29         0          16         0
   MTYPE_OSPF6_SUMMARY_ADDRE 25         0          16         0
   MTYPE_OSPF6_IF            280        1          64         0
   MTYPE_OSPF6_NEIGHBOR      12502      1          32         0
   MTYPE_OSPF6_ROUTE_NODE    21         1          4096       0
   MTYPE_OSPF6_ROUTE_INFO    35         1          4096       0
   MTYPE_OSPF6_PREFIX        20         0          16         0
   MTYPE_OSPF6_LSA           129        3          4096       0
   MTYPE_OSPF6_VERTEX        166        1          64         0
   MTYPE_OSPF6_SPFTREE       44         1          2          0
   MTYPE_OSPF6_NEXTHOP       28         2          256        0
   MTYPE_OSPF6_EXTERNAL_INFO 40         0          4096       0
   MTYPE_THREAD              32         5          1024       0
   MTYPE_OSPF6_LINK_LIST     20         3098       20480      0
   MTYPE_OSPF6_LINK_NODE     12         19         20480      0
   MTYPE_OSPF6_LSA_RETRANSMI 6          3          8192       0
global memory pool for all instances
   Memory Type               Size       Allocated  Max-alloc  Alloc-Fails
   MTYPE_OSPF6_TOP           61475      1          1          0
   MTYPE_OSPF6_LSA_HDR       56         3          4          0
   MTYPE_OSPF6_RMAP_COMPILED 0          0          0          0
   MTYPE_OSPF6_OTHER         0          0          0          0
   MTYPE_THREAD_MASTER       84         1          1          0
```

show ipv6 ospf neighbor

Displays OSPFv3 neighbor information.

Syntax

show ipv6 ospf neighbor [**detail** | **router-id** *A.B.C.D*]

Parameters

detail

Displays detailed neighbor information.

router-id *A.B.C.D*

Displays neighbor information for the specified router ID.

Modes

User EXEC mode

Command Output

The **show ip ospf neighbor** command displays the following information:

Output field	Description
Router ID	The IPv4 address of the neighbor. By default, the router ID is the IPv4 address configured on the lowest numbered loopback interface. If the device does not have a loopback interface, the default router ID is the lowest numbered IPv4 address configured on the device.
Pri	The OSPFv3 priority of the neighbor. The priority is used during election of the DR and BDR.
State	The state between the device and the neighbor. The state can be one of the following: • Down • Attempt • Init • 2-Way • ExStart • Exchange • Loading • Full
DR	The router ID (IPv4 address) of the DR.
BDR	The router ID (IPv4 address) of the BDR.

Output field	Description
Interface [State]	The interface through which the router is connected to the neighbor. The state of the interface can be one of the following: • DR - The interface is functioning as the Designated Router for OSPFv3. • BDR - The interface is functioning as the Backup Designated Router for OSPFv3. • Loopback - The interface is functioning as a loopback interface. • P2P - The interface is functioning as a point-to-point interface. • Passive - The interface is up but it does not take part in forming an adjacency. • Waiting - The interface is trying to determine the identity of the BDR for the network. • None - The interface does not take part in the OSPF interface state machine. • Down - The interface is unusable. No protocol traffic can be sent or received on such an interface. • DR other - The interface is a broadcast or NBMA network on which another router is selected to be the DR.

The **show ip ospf neighbor router-id** command displays the following information:

Output field	Description
Router ID	The IPv4 address of the neighbor. By default, the router ID is the IPv4 address configured on the lowest numbered loopback interface. If the device does not have a loopback interface, the default router ID is the lowest numbered IPv4 address configured on the device.
Pri	The OSPFv3 priority of the neighbor. The priority is used during election of the DR and BDR.
State	The state between the device and the neighbor. The state can be one of the following: • Down • Attempt • Init • 2-Way • ExStart • Exchange • Loading • Full
DR	The router ID (IPv4 address) of the DR.
BDR	The router ID (IPv4 address) of the BDR.

Output field	Description
Interface [State]	The interface through which the router is connected to the neighbor. The state of the interface can be one of the following: • DR - The interface is functioning as the Designated Router for OSPFv3. • BDR - The interface is functioning as the Backup Designated Router for OSPFv3. • Loopback - The interface is functioning as a loopback interface. • P2P - The interface is functioning as a point-to-point interface. • Passive - The interface is up but it does not take part in forming an adjacency. • Waiting - The interface is trying to determine the identity of the BDR for the network. • None - The interface does not take part in the OSPF interface state machine. • Down - The interface is unusable. No protocol traffic can be sent or received on such a interface. • DR other - The interface is a broadcast or NBMA network on which another router is selected to be the DR.
DbDesc bit	The Database Description packet, which includes 3 bits of information: • The first bit can be "i" or "-". "i" indicates the inet bit is set. "-" indicates the inet bit is not set. • The second bit can be "m" or "-". "m" indicates the more bit is set. "-" indicates the more bit is not set. • The third bit can be "m" or "s". An "m" indicates the master. An "s" indicates standby.
Index	The ID of the LSA from which the neighbor learned of the router.
DR Decision	The router ID (IPv4 address) of the neighbor's elected DR and BDR.
Last Received Db Desc	The content of the last database description received from the specified neighbor.
Number of LSAs in Db Desc retransmitting	The number of LSAs that need to be retransmitted to the specified neighbor.
Number of LSAs in Summary List	The number of LSAs in the neighbor's summary list.
Number of LSAs in Request List	The number of LSAs in the neighbor's request list.
Number of LSAs in Retransmit List	The number of LSAs in the neighbor's retransmit list.
Seqnum Mismatch	The number of times sequence number mismatches occurred.
BadLSReq	The number of times the neighbor received a bad link-state request from the device.
One way received	The number of times a hello packet, which does not mention the router, is received from the neighbor. This omission in the hello packet indicates that the communication with the neighbor is not bidirectional.
Inactivity Timer	The number of times that the neighbor's inactivity timer expired.
Db Desc Retransmission	The number of times sequence number mismatches occurred.
LSReqRetrans	The number of times the neighbor retransmitted link-state requests to the device.
LSUpdateRetrans	The number of times the neighbor retransmitted link-state updates to the device.
LSA Received	The number of times the neighbor received LSAs from the device.
LS Update Received	The number of times the neighbor received link-state updates from the device.

Examples

The following is sample output from the **show ipv6 ospf neighbor** command.

```
device> show ipv6 ospf neighbor

Total number of neighbors in all states: 2
Number of neighbors in state Full      : 2
RouterID        Pri State    DR              BDR             Interface  [State]
192.168.98.111    1 Full     192.168.98.111  192.168.98.213  e 4/3/1    [BDR]
192.168.98.111    1 Full     192.168.98.111  192.168.98.213  ve 17      [BDR]
```

The following is sample output from the **show ipv6 ospf neighbor** command when the **router-id** keyword is sued.

```
device> show ipv6 ospf neighbor router-id 192.168.98.111

RouterID        Pri State    DR              BDR             Interface     [State]
192.168.98.111    1 Full     192.168.98.111  192.168.98.213  e 4/3/1       [BDR]
                Option: 00-00-13    QCount: 0    Timer: 73
    DbDesc bit for this neighbor: --m
    Nbr Ifindex of this router: 136
    Nbr DRDecision: DR 192.168.98.111, BDR 192.168.98.213
    Last received DbDesc: opt:xxx ifmtu:0 bit:--s seqnum:0
    Number of LSAs in DbDesc retransmitting: 0
    Number of LSAs in SummaryList: 0
    Number of LSAs in RequestList: 0
    Number of LSAs in RetransList: 0
    SeqnumMismatch       0 times, BadLSReq             0 times
    OnewayReceived       0 times, InactivityTimer      0 times
    DbDescRetrans        0 times, LSReqRetrans         0 times
    LSUpdateRetrans     11 times
    LSAReceived        379 times, LSUpdateReceived   258 times
RouterID        Pri State    DR              BDR             Interface     [State]
192.168.98.111    1 Full     192.168.98.111  192.168.98.213  ve 17         [BDR]
                Option: 00-00-13    QCount: 0    Timer: 44
    DbDesc bit for this neighbor: --m
    Nbr Ifindex of this router: 1156
    Nbr DRDecision: DR 192.168.98.111, BDR 192.168.98.213
    Last received DbDesc: opt:xxx ifmtu:0 bit:--s seqnum:0
    Number of LSAs in DbDesc retransmitting: 0
    Number of LSAs in SummaryList: 0
    Number of LSAs in RequestList: 0
    Number of LSAs in RetransList: 0
    SeqnumMismatch       0 times, BadLSReq             0 times
    OnewayReceived       0 times, InactivityTimer      0 times
    DbDescRetrans        0 times, LSReqRetrans         0 times
    LSUpdateRetrans      3 times
    LSAReceived        317 times, LSUpdateReceived   262 times
```

show ipv6 ospf redistribute route

Displays all IPv6 routes or a specified IPv6 route that the device has redistributed into OSPFv3.

Syntax

show ipv6 ospf redistribute route *A.B.C.D:M*

Parameters

A.B.C.D:M

Specifies an IPv6 network prefix.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf redistribute route** command displays the following information:

Output field	Description
ID	An ID for the redistributed route.
Prefix	The IPv6 routes redistributed into OSPFv3.
Protocol	The protocol from which the route is redistributed into OSPFv3. Redistributed protocols can be the following: • BGP - BGP4+. • RIP - RIPng. • Static - IPv6 static route table. • Connected - A directly connected network.
Metric Type	The metric type used for routes redistributed into OSPFv3. The metric type can be the following: • Type-1 - Specifies a small metric (2 bytes). • Type-2 - Specifies a big metric (3 bytes).
Metric	The value of the default redistribution metric, which is the OSPF cost of redistributing the route into OSPFv3.

Examples

The following is sample output from the **show ipv6 ospf redistribute route** command when no IPv6 network prefix is specified.

```
device> show ipv6 ospf redistribute route

Id      Prefix                                  Protocol  Metric Type  Metric
1       5100::192:213:163:0/112                 Connect   Type-2       0
2       5100:213:213:0:192:213:1:0/112          Connect   Type-2       0
```

The following is sample output from the **show ipv6 ospf redistribute route** command when an IPv6 network prefix is specified.

```
device> show ipv6 ospf redistribute route 2001:db8::
Id     Prefix                          Protocol  Metric Type  Metric
1      2001:db8::/32                   Static    Type-2       1
```

show ipv6 ospf routes

Displays OSPFv3 routes.

Syntax

show ipv6 ospf routes *A.B.C.D:M*

Parameters

A.B.C.D:M

Specifies a destination IPv6 address.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf routes** command displays the following information:

Output field	Description
Current Route Count (Displays with the entire OSPFv3 route table only)	The number of route entries currently in the OSPFv3 route table.
Intra/Inter/External (Type1/Type2) (Displays with the entire OSPFv3 route table only)	The breakdown of the current route entries into the following route types: • Inter - The number of routes that pass into another area. • Intra - The number of routes that are within the local area. • External1 - The number of type 1 external routes. • External2 - The number of type 2 external routes.
Equal-cost multi-path (Displays with the entire OSPFv3 route table only)	The number of equal-cost routes to the same destination in the OSPFv3 route table. If load sharing is enabled, the device equally distributes traffic among the routes.
Destination	The IPv6 prefixes of destination networks to which the device can forward IPv6 packets. "*IA" indicates the next router is an intra-area router.
Cost	The type 1 cost of this route.
E2 Cost	The type 2 cost of this route.
Tag	The route tag for this route.
Flags	Flags associated with this route.
Dis	Administrative Distance for this route.
Next-Hop Router	The IPv6 address of the next router a packet must traverse to reach a destination.
Outgoing Interface	The router interface through which a packet must traverse to reach the next-hop router.
Adv_Router	The IP address of the advertising router.

Examples

The following example displays the entire OSPFv3 route table for the device.

```
device> show ipv6 ospf routes

Current Route count: 309
    Intra: 304 Inter: 4 External: 1 (Type1 0/Type2 1)
    Equal-cost multi-path: 56
    OSPF Type: IA- Intra, OA - Inter, E1 - External Type1, E2 - External Type2
   Destination                    Cost       E2Cost     Tag        Flags    Dis
E2 ::/0                           2          1          0          00000003 110
   Next_Hop_Router                Outgoing_Interface Adv_Router
   fe80::768e:f8ff:fe3e:1800      e 4/3/1            192.168.98.111
   fe80::768e:f8ff:fe3e:1800      ve 17              192.168.98.111
   Destination                    Cost       E2Cost     Tag        Flags    Dis
IA 5100::192:61:1001:0/112        3          0          0          00000007 110
   Next_Hop_Router                Outgoing_Interface Adv_Router
   fe80::768e:f8ff:fe3e:1800      e 4/3/1            192.168.98.111
   fe80::768e:f8ff:fe3e:1800      ve 17              192.168.98.111
   Destination                    Cost       E2Cost     Tag        Flags    Dis
IA 5100::192:111:2:111/128        1          0          0          00000007 110
   Next_Hop_Router                Outgoing_Interface Adv_Router
   fe80::768e:f8ff:fe3e:1800      e 4/3/1            192.168.98.111
   fe80::768e:f8ff:fe3e:1800      ve 17              192.168.98.111
   Destination                    Cost       E2Cost     Tag        Flags    Dis
IA 5100::192:111:3:111/128        1          0          0          00000007 110
   Next_Hop_Router                Outgoing_Interface Adv_Router
   fe80::768e:f8ff:fe3e:1800      e 4/3/1            192.168.98.111
--More--, next page: Space, next line: Return key, quit: Control-c
```

show ipv6 ospf spf

Displays OSPFv3 SPF node, table, and tree information.

Syntax

show ipv6 ospf spf { **node** | **table** | **tree** } [**area** { *A.B.C.D* | *decimal* }]

Parameters

node

Displays OSPFv3 node information.

table

Specifies a SPF table.

tree

Specifies a SPF tree.

area

Specifies an area.

A.B.C.D

Area address in dotted decimal format.

decimal

Area address in decimal format.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf spf node** command displays the following information:

Output field	Description
SPF node	Each SPF node is identified by its device ID (IPv4 address). If the node is a child node, it is additionally identified by an interface on which the node can be reached appended to the router ID in the format *router-id* :*interface-id* .
Cost	The cost of traversing the SPF node to reach the destination.
Hops	The number of hops needed to reach the parent SPF node.
Next Hops to Node	The IPv6 address of the next hop-router or the router interface through which to access the next-hop router.
Parent Nodes	The SPF node's parent nodes. A parent node is an SPF node at the highest level of the SPF tree, which is identified by its router ID.
Child Nodes	The SPF node's child nodes. A child node is an SPF node at a lower level of the SPF tree, which is identified by its router ID and interface on which the node can be reached.

The **show ipv6 ospf spf table** command displays the following information:

Output field	Description
Destination	The destination of a route, which is identified by the following: • "R", which indicates the destination is a router. "N", which indicates the destination is a network. • An SPF node's device ID (IPv4 address). If the node is a child node, it is additionally identified by an interface on which the node can be reached appended to the router ID in the format *router-id* :*interface-id* .
Bits	A bit that indicates the capability of the device. The bit can be set to one of the following: • B - The device is an area border router. • E - The device is an AS boundary router. • V - The device is a virtual link endpoint. • W - The device is a wildcard multicast receiver.
Options	A 24-bit field that enables IPv6 OSPF routers to support the optional capabilities. When set, the following bits indicate the following: V6 - The router should be included in IPv6 routing calculations. E - The router floods AS-external-LSAs as described in RFC 2740. MC - The router forwards multicast packets as described in RFC 1586. N - The router handles type 7 LSAs as described in RFC 1584. R - The originator is an active router. DC -The router handles demand circuits.
Cost	The cost of traversing the SPF node to reach the destination.
Next hop	The IPv6 address of the next hop-router.
Interface	The router interface through which to access the next-hop router.

Examples

The following example shows information about SPF nodes.

```
device> show ipv6 ospf spf node

SPF node for Area 0.0.0.200
 SPF node 192.168.98.213,  cost: 0,  hops: 0
  nexthops to node:
  parent nodes:
  child nodes: 192.168.98.111:136 192.168.98.111:1156
 SPF node 192.168.98.111:136,  cost: 1,  hops: 1
  nexthops to node:    :: e 4/3/1
  parent nodes: 192.168.98.213
  child nodes: 192.168.98.111:0
 SPF node 192.168.98.111:1156,  cost: 1,  hops: 1
  nexthops to node:    :: ve 17
  parent nodes: 192.168.98.213
  child nodes: 192.168.98.111:0
 SPF node 192.168.98.111:0,  cost: 1,  hops: 2
  nexthops to node:    fe80::768e:f8ff:fe3e:1800 e 4/3/1
                       fe80::768e:f8ff:fe3e:1800 ve 17
  parent nodes: 192.168.98.111:136 192.168.98.111:1156
  child nodes:
SPF node for Area 400
 SPF node 192.168.98.213,  cost: 0,  hops: 0
  nexthops to node:
  parent nodes:
  child nodes:
SPF node for Area 0.0.0.0
 SPF node 192.168.98.213,  cost: 0,  hops: 0
  nexthops to node:
  parent nodes:
  child nodes: 192.168.98.111:0
 SPF node 192.168.98.111:0,  cost: 1,  hops: 1
  nexthops to node:    5100::192:113:111:111 VLink 1
  parent nodes: 192.168.98.213
  child nodes: 192.168.98.61:5 192.168.98.190:1551 192.168.98.112:643
 SPF node 192.168.98.61:5,  cost: 2,  hops: 2
  nexthops to node:    5100::192:113:111:111 VLink 1
  parent nodes: 192.168.98.111:0
  child nodes: 192.168.98.61:0
 SPF node 192.168.98.190:1551,  cost: 2,  hops: 2
  nexthops to node:    5100::192:113:111:111 VLink 1
--More--, next page: Space, next line: Return key,
```

The following example shows information about SPF nodes in area 0.

```
device> show ipv6 ospf spf node area 0

SPF node for Area 0
SPF node 10.223.223.223,  cost: 0,  hops: 0
 nexthops to node:
 parent nodes:
 child nodes: 10.223.223.223:88
SPF node 10.223.223.223:88,  cost: 1,  hops: 1
 nexthops to node:    :: ethe 1/3/2
 parent nodes: 10.223.223.223
 child nodes: 10.1.1.1:0
SPF node 10.1.1.1:0,  cost: 1,  hops: 2
 nexthops to node:    fe80::2e0:52ff:fe91:bb37 ethe 1/3/2
 parent nodes: 10.223.223.223:88
 child nodes:
```

The following example displays the SPF table for area 0.

```
device> show ipv6 ospf spf table area 0

SPF table for Area 0.0.0.200
  Destination          Bits Options  Cost  Nexthop                   Interface
R 192.168.98.111      --V-B V6E---R-   1  fe80::768e:f8ff:fe3e:1800 e 4/3/1
R 192.168.98.111      --V-B V6E---R-   1  fe80::768e:f8ff:fe3e:1800 ve 17
N 192.168.98.111[136] ----- V6E---R-   1  ::                        e 4/3/1
N 192.168.98.111[1156 ----- V6E---R-   1  ::                        ve 17
 SPF table for Area 400
  Destination           Bits Options  Cost  Nexthop                   Interface
 SPF table for Area 0.0.0.0
  Destination           Bits Options  Cost  Nexthop                   Interface
R 192.168.98.71       ---E- V6E---RD   4  fe80::768e:f8ff:fe3e:1800 e 4/3/1
R 192.168.98.71       ---E- V6E---RD   4  fe80::768e:f8ff:fe3e:1800 ve 17
R 192.168.98.190      ---E- V6E---R-   2  fe80::768e:f8ff:fe3e:1800 e 4/3/1
R 192.168.98.190      ---E- V6E---R-   2  fe80::768e:f8ff:fe3e:1800 ve 17
```

The following example displays the SPF tree for area 0.

```
device> show ipv6 ospf spf tree area 0

   SPF tree for Area 0
 +- 10.223.223.223 cost 0
     +- 10.223.223.223:88 cost 1
         +- 10.1.1.1:0 cost 1
```

show ipv6 ospf summary

Displays summary information for all OSPFv3 instances.

Syntax

show ipv6 ospf summary

Modes

User EXEC mode

Examples

The following example shows summarized OSPFv3 information.

```
device> show ipv6 ospf summary

Seq Instance        Intfs   Nbrs    Nbrs-Full LSAs    Routes
1   default-vrf     5       2       1         12      2
```

show ipv6 ospf virtual-links

Displays information about all OSPFv3 virtual links or specified links.

Syntax

show ipv6 ospf virtual-links [**brief**]

Parameters

brief

Displays summary information.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf virtual-links** command displays the following information:

Output field	Description
Index	An index number associated with the virtual link.
Transit Area ID	The ID of the shared area of two ABRs that serves as a connection point between the two routers.
Router ID	Router ID of the router at the other end of the virtual link (virtual neighbor).
Interface Address	The local address used to communicate with the virtual neighbor.
State	The state of the virtual link. Possible states include the following: • P2P - The link is functioning as a point-to-point interface. • DOWN - The link is down.

Examples

The following is sample output from the **show ipv6 ospf virtual-links** command when no arguments or keywords are used:

```
device> show ipv6 ospf virtual-link

Transit Area ID  Router ID        Interface Address             State
0.0.0.200        192.168.98.111   5100::192:213:111:213         P2P
  Timer intervals(sec) :
    Hello 10, Hello Jitter 10,  Dead 40, Retransmit 5, TransmitDelay 1
  DelayedLSAck:    65 times
  Authentication: Not Configured
  Statistics:
      Type     tx         rx         tx-byte    rx-byte
      Unknown  0          0          0          0
      Hello    819        816        32760      32640
      DbDesc   10         11         300        11008
      LSReq    6          0          6492       0
      LSUpdate 1579       1161       138284     101488
      LSAck    65         52         29340      29532
      OSPF messages dropped,no authentication: 0
  Neighbor: State: Full Address: 5100::192:113:111:111 Interface: e 4/3/1
```

show ipv6 ospf virtual-neighbor

Displays information about OSPFv3 virtual neighbors.

Syntax

show ipv6 ospf virtual-neighbor [**brief**]

Parameters

brief

Displays summary information.

Modes

User EXEC mode

Command Output

The **show ipv6 ospf virtual-neighbor** command displays the following information:

Output field	Description
Index	An index number associated with the virtual neighbor.
Router ID	IPv4 address of the virtual neighbor.
Address	The IPv6 address to be used for communication with the virtual neighbor.
State	The state between the device and the virtual neighbor. The state can be one of the following: • Down • Attempt • Init • 2-Way • ExStart • Exchange • Loading • Full
Interface	The interface type.
Option	The bits set in the virtual-link hello or database descriptors.
QCount	The number of packets that are in the queue and ready for transmission. If the system is stable, this number should always be 0.
Timer	A timer that counts down until a hello packet should arrive. If "timers" elapses and a hello packet has not arrived, the VL neighbor is declared to be down.

Examples

The following is sample output from the **show ipv6 ospf virtual-neighbor** command when no arguments or keywords are used:

```
device> show ipv6 ospf virtual-neighbor

Index Router ID        Address                       State     Interface
1     10.14.14.14      2001:db8:44:44::4             Full      eth 1/1/8
                Option: 00-00-00    QCount: 0    Timer: 408
2     10.14.14.14      2001:db8:44:44::4             Full      tunnel 256
                Option: 00-00-00    QCount: 0    Timer: 43
```

show ipv6 pim anycast-rp

Displays information for an IPv6 PIM Anycast rendezvous point (RP) interface.

Syntax

show ipv6 pim anycast-rp

Modes

User EXEC mode

Command Output

The **show ipv6 pim anycast-rp** command displays the following information:

Output Field	Description
Number of Anycast RP	Specifies the number of Anycast RP sets in the multicast domain.
Anycast RP	Specifies a shared RP address used among multiple PIM routers.
ACL ID	Specifies the ACL ID assigned.
ACL Name	Specifies the name of the Anycast RP set.
ACL Filter	Specifies the ACL filter state SET or UNSET.
Peer List	Specifies host addresses that are permitted in the Anycast RP set.

Examples

The following example shows information for an IPv6 PIM Anycast RP interface.

```
device> show ipv6 pim anycast-rp

Number of Anycast RP: 1
Anycast RP: 1001::1
  ACL ID: 200
  ACL Name: my-anycast-rp-set
  ACL Filter: SET
  Peer List:
   1:1:1::1
   2:2:2::2
   3:3:3::3
```

show ipv6 pim bsr

Displays information on a device that has been elected as the bootstrap router (BSR).

Syntax

show ipv6 pim bsr

Modes

User EXEC mode

Command Output

The **show ipv6 pim bsr** command displays the following information:

Output Field	Description
BSR address	The IPv6 address of the interface configured as the IPv6 PIM Sparse (BSR.
BSR priority	The priority assigned to the interface for use during the BSR election process. During BSR election, the priorities of the candidate BSRs are compared and the interface with the highest BSR priority becomes the BSR.
Hash mask length	The number of significant bits in the IPv6 multicast group comparison mask. This mask determines the IPv6 multicast group numbers for which the device can be a BSR. The default is 32 bits, which allows the device to be a BSR for any valid IPv6 multicast group number. **NOTE** This field appears only if this device is a candidate BSR.
Next bootstrap message in	Indicates how many seconds will pass before the BSR sends its next Bootstrap message. **NOTE** This field appears only if this device is the BSR.
Next Candidate-RP-advertisement message in	Indicates how many seconds will pass before the BSR sends its next candidate RP advertisement message. **NOTE** This field appears only if this device is a candidate BSR.
RP	Indicates the IPv6 address of the Rendezvous Point (RP). **NOTE** This field appears only if this device is a candidate BSR.
group prefixes	Indicates the multicast groups for which the RP listed by the previous field is a candidate RP. **NOTE** This field appears only if this device is a candidate BSR.

Output Field	Description
Candidate-RP-advertisement period	Indicates how frequently the BSR sends candidate RP advertisement messages. **NOTE** This field appears only if this device is a candidate BSR.

Examples

The following example shows information for a device that has been elected as the BSR.

```
device> show ipv6 pim bsr

PIMv2 Bootstrap information for Vrf Instance : default-vrf
------------------------------------------------------------------
This system is the Elected BSR
BSR address: 2006:1001::1. Hash Mask Length 64. Priority 32.
Next bootstrap message in 00:01:00
Configuration:
 Candidate loopback 1 (Address 2006:1001::1). Hash Mask Length 64. Priority 32.
Next Candidate-RP-advertisment in 00:00:50
 RP: 2006:1001::1
  group prefixes:
  ff00:: / 8
 Candidate-RP-advertisement period: 60
 Candidate-RP-advertisement period: 60

 Candidate-RP-advertisement period: 60
```

The following example shows information for a device that is not the BSR.

```
device> show ipv6 pim bsr

PIMv2 Bootstrap information for Vrf Instance : default-vrf
------------------------------------------------------------
BSR address: 2006:1001::1. Hash Mask Length 64. Priority 32.
This system is not a Candidate-RP.
This system is not a Candidate-RP.
```

show ipv6 pim counter

Displays IPv6 PIM counter and statistics information.

Syntax

show ipv6 pim counter [**tbp** | **nsr**]

Parameters

tbp

Specifies multicast Traverse by Parts (TBP) statistics.

nsr

Specifies multicast nonstop routing (NSR) statistics.

Modes

User EXEC mode

Examples

The following example displays IPv6 PIM counter and statistic information.

```
device# show ipv6 pim counter

Event Callback:
   DFTVlanChange   :          0               VlanPort         :          0

LP to MP IPCs:
   SM_REGISTER     :          0               MCAST_CREATE     :         80
   S_G_AGEOUT      :        880               WRONG_IF         :        393
   ABOVE_THRESHOLD :        891               MCAST_FIRST_DATA :       1903
   SET KAT         :        960               SET KAT INFINITY :        960

MP to LP IPCs:
   INIT            :       7371               INSERT_VPORT     :       1120
   DELETE_VPORT    :       6558               DELETE_VIF       :       7360
   MOVE_VPORT      :          0               DEL_ENTRY        :       1994
   INSERT_SOURCE   :          0               DELETE_SOURCE    :          0
   RESET_SRC_LIST  :          0               MOVE_TNNL_PORT   :          0
   FLAG_CHANGE     :       5280               FDB_VIDX_CHANGE  :          0
   OIF_FLAG_CHANGE :          0

Error Counters:
   PIM_PKT_DRP     :          0               PIM_PKT_DRP(Glb) :          0
   MCGRP_PKT_DRP   :          0               MCGRP_PKT_DRP(Gl):          0
   PIM_THR_DRP     :          0               PIM_THR_DRP(Glb) :          0
   MCGRP_THR_DRP   :          0               MCGRP_THR_DRP(Gl):          0
   BDRY_DRP        :          0               RPSET_MAXED      :          0
```

The following example displays IPv6 PIM counter and statistic information for NSR.

```
device# show ipv6 pim counter nsr
Mcache sync (entity id: 203)
  pack: 0
  unpack: 0
  ack: 0
RPset sync (entity id: 201)
  pack: 0
  unpack: 0
  ack: 43
BSR status (entity id: 202)
  pack: 0
  unpack: 0
  ack: 36
```

History

Release version	Command history
08.0.90	Output for this command was modified so that information about dropped packets due to configured multicast boundaries is included.
10.0.00	Support for nonstop routing (NSR) statistics was added.

show ipv6 pim error

Displays information for IPv6 Protocol Independent Multicast (PIMv6) error counters.

Syntax

show ipv6 pim error

Modes

User EXEC mode

Examples

The following example displays information for IPv6 PIM error counters including information about Join and Prune configurations.

```
device(config-ipv6-pim-router)# show ipv6 pim error
Vrf Instance : default-vrf
-------------------------------------
Protocol errors:
PIM_PKT_DRP    : 0    PIM_PKT_DRP(Glb)       : 0
MCGRP_PKT_DRP : 0    MCGRP_PKT_DRP(Gl)      : 0
PIM_THR_DRP    : 0    PIM_THR_DRP(Glb)       : 0
MCGRP_THR_DRP : 0    MCGRP_THR_DRP(Gl)      : 0
RPSET_MAXED    : 0    Join/Prune Drops      : 1999
Forwarding Errors (Packets Drops):
RPF-Fail: 0 No-RP    : 0 IfMsmtch: 0
OIFEmpty: 0 InvldIf : 0 TTLXpire: 0
NoFwEntr: 0 TrkMove : 0 PortMove: 0
NoCause : 0 FwEntrFl: 0 ResFail : 0
SSMNoEnt: 0 InvldGrp: 0 BidirSW : 0
WrongIf : 0 IPCError: 0 IPCBufEr: 0
DMACErr : 0
```

History

Release version	Command history
09.0.10	The output for this command was enhanced to include information about Join and Prune configurations and dropped register messages.

show ipv6 pim group

Displays IPv6 PIM group information.

Syntax

show ipv6 pim group

Modes

User EXEC mode

Command Output

The **show ipv6 pim group** command displays the following information:

Output Field	Description
Total number of Groups	Lists the total number of IPv6 multicast groups the device is forwarding.
Group	The multicast group address.
Group member at	Interface name and number.

Examples

The following example displays IPv6 PIM group information.

```
device# show ipv6 pim group
Total number of groups: 1
1    Group ff7e:a40:2001:3e8:27:0:1:2
     Group member at  e 1/3/1: v31
```

show ipv6 pim hw-resource

Displays usage and fail-count information for SG entries on virtual routing and forwarding instances (VRFs).

Syntax

show ipv6 pim hw-resource

Modes

User EXEC mode

Command Output

The **show ipv6 pim hw-resource** command displays the following information:

Output Field	Description
VRF	Name of the VRF.
Usage	Number of allocated SG entries in this VRF.
Fail	Number of failures while allocating SG entries in this VRF (due to system-max limit).
Total usage	Total number of SG entries in the system (All-VRFs).
System-max limit for SG entries	Configured system limit using the **pim6-hw-mcache** command.

Examples

The following example displays hardware resource information for all VRFs.

```
device> show ipv6 pim all-vrf hw-resource

              VRF  In-Use     Fail
      default-vrf   3072        8
             blue   3072        0
   ------------------------------
      Total usage   6144

   System-max limit for SG entries: 6144
```

show ipv6 pim interface

Displays information for IPv6 PIM interfaces.

Syntax

show ipv6 pim interface [**ethernet** *unit/slot/port* | **lag** *number* | **loopback** *loopback-number* | **tunnel** *number* | **ve** *ve-number*]

Parameters

ethernet *unit/slot/port*

Specifies a physical interface. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

lag *number*

Specifies a LAG interface.

loopback *loopback-number*

Specifies a loopback interface.

tunnel *number*

Specifies a GRE tunnel.

ve *ve-number*

Specifies a virtual interface.

Modes

User EXEC mode

Examples

The following example displays output from the **show ipv6 pim interface** command, showing that ACL f10 is applied to interface 1/1/9 to control neighbor access.

```
device> show ipv6 pim interface

Flags     : SM  - Sparse Mode v2

--------+---------------+-----+---+-------+---+-----+-------+-------+----+--------+

Int'face|Local          |Mode |St |Des Rtr|TTL|Mcast| Filter| VRF   |DR  |Override
        |Address        |     |   |Add Prt|Thr|Bndry|  ACL  |       |Prio|Interval
--------+---------------+-----+---+-------+---+-----+-------+-------+----+--------+
e1/1/1   3000::2         SM   Ena  Itself   1  None   None   default  1   3000ms
e1/1/9   201::1          SM   Ena  Itself   1  None   f10    default  1   3000ms
e1/1/12  1222::1         SM   Dis  Itself   1  None   None   default  1   3000ms
v20      2000::2         SM   Ena  Itself   1  None   None   default  1   3000ms
v60      6000::1         SM   Ena  Itself   1  None   None   default  1   3000ms
v310     1100::2         SM   Dis  Itself   1  None   None   default  1   3000ms
v360     1600::1         SM   Dis  Itself   1  None   None   default  1   3000ms
l2       4444::2         SM   Ena  Itself   1  None   None   default  1   3000ms
l3       7711::11        SM   Ena  Itself   1  None   None   default  1   3000ms
Total Number of Interfaces : 9
```

History

Release version	Command history
08.0.20a	This command was modified to display neighbor filter information.

show ipv6 pim jp-policy

Displays IPv6 Protocol Independent Multicast (PIMv6) Join and Prune policy configurations.

Syntax

show ipv6 pim jp-policy [**vrf** *vrf-name*]

Modes

Privileged EXEC mode

Examples

The following example displays IPv6 PIM (RP, G), (*, G), and (S, G) Join and Prune policy configuration information and the number of Join and Prune drops for each such policy.

```
device> show ipv6 pim jp-policy

Vrf Instance : default-vrf
---------------------------
(RP, G) JP policy
---------
(RP, G) JP policy count: 3
RP-Address     ACL Name     (RP, G) Join Drops     (RP, G) Prune Drops
10:9::9:9      test-acl     1500                   499
22:9::9:9      122          1888                   1000
100:9::9:9     test-acl     921                    300
---------------------------
(*, G) and (S, G) JP policy
---------
ACL Name     (*, G) Join Drops     (*, G) Prune Drops      (S, G) Join Drops     (S, G) Prune Drops
wg-sg-acl    1500                  499                      385                   139
```

History

Release version	Command history
09.0.10	This command was introduced.

show ipv6 pim mcache

Displays the IPv6 PIM multicast cache.

Syntax

show ipv6 pim mcache [*source-address* [*group-address*] | *group-address* | **counts** | **dense** | **dit-idx** *dit-idx* | **g_entries** | **receiver** { **ethernet** *unit/slot/port* | **lag** *number* | **vlan** *vlan-id* } | **sg_entries** | **sparse** | **ssm**]

show ipv6 pim mcache counts [*source-address* [*group-address*] | *group-address* | **dense** | **dit-idx** *dit-idx* | **g_entries** | **receiver** { **ethernet** *unit/slot/port* | **lag** *number* | **vlan** *vlan-id* } | **sg_entries** | **sparse** | **ssm**]

Parameters

source-address
: Specifies the multicast cache source address.

group-address
: Specifies the multicast cache group address.

counts
: Specifies the number of entries.

dense
: Specifies displaying only the PIM Dense Mode entries.

dit-idx *dit-idx*
: Specifies displaying all entries that match a specified downstream interface (DIT).

g_entries
: Specifies displaying only the (*, G) entries.

receiver
: Specifies displaying all entries that egress a specified interface.

ethernet *unit/slot/port*
: Specifies a physical interface. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

lag *number*
: Specifies a LAG interface.

vlan *vlan-id*
: Specifies a VLAN.

sg_entries
: Specifies displaying only the (S, G) entries.

sparse
: Specifies displaying only the PIM Sparse Mode entries.

ssm
: Specifies displaying only the SSM entries.

Modes

User EXEC mode

Command Output

The **show ipv6 pim mcache** command displays the following information:

Field	Description
Total entries in mcache	Shows the total number of IPv6 PIM mcache entries.
upstream neighbor	Shows the upstream neighbor for the Source/RP based on the type of entry. For (*,G) it shows the upstream neighbor towards the RP. For (S,G) entries it shows the upstream neighbor towards the source.
Flags	Show the flags associated with the forward entry.
slow ports ethe	Shows the forwarding port ID of the mcache entry which is in the software forwarding path.
AgeSltMsk	Shows the slot number on which MP expects ingress traffic.
L2 FID	Shows the hardware resource allocated for the traffic switched to receivers in the ingress VLAN.
DIT	Shows the hardware resource allocated for routed receivers.
Forwarding_oif	Shows the number of outgoing interfaces of the mcache entry.
immediate_oifs	Shows the local immediate outgoing interface of the mcache entry.
blocked_oifs	Shows the PIM Sparse mode blocked outgoing interfaces.
L3 (SW) 1	Shows whether the traffic is switched or routed out of the interface.
L3 (HW) 1	The forwarding entries by using hardware.
Src-Vlan	VLAN associated with the ingress interface.

Examples

The following example displays the IPv6 PIM multicast cache.

```
device> show ipv6 pim mcache

IP Multicast Mcache Table
Entry Flags    : SM  - Sparse Mode, SSM - Source Specific Multicast, DM - Dense Mode
                 RPT    - RPT Bit, SPT - SPT Bit, LSRC - Local Source, LRCV - Local Receiver
                 HW - HW Forwarding Enabled, FAST - Resource Allocated, TAG - Need For Replication Entry
                 REGPROB - Register In Progress, REGSUPP - Register Suppression Timer
                 MSDPADV - Advertise MSDP, NEEDRTE - Route Required for Src/RP,  PRUN - DM Prune
Upstream
Interface Flags: IM - Immediate, IH - Inherited, WA - Won Assert
                 MJ - Membership Join, MI - Membership Include, ME - Membership Exclude
                 BR - Blocked RPT, BA - Blocked Assert, BF - Blocked Filter, BI - Blocked IIF
Total entries in mcache: 4
1    (*, ff05::4422) RP 2006:1001::1, in v503 (tag e2/1/11), Uptime 1d 00:27:26 (SM)
     upstream neighbor fe80::204:ff:fe05:6 (2006:503::1001)
     Flags (0x002604a2) SM RPT LRCV TAG
     slow ports: ethe 3/1/1
     AgeSltMsk: 0, L2 FID: 8192, DIT: NotReq, profile: none
     Forwarding_oif: 1, Immediate_oif: 1, Blocked_oif: 0
     L3 (SW) 1:
       e3/1/1(VL170), 1d 00:27:26/0, Flags: MJ
2    (2006:170::1010, ff34::500) in v170 (tag e3/1/1), Uptime 00:37:51, Rate 0 (SM)
     Source is directly connected. RP 2006:1001::1
     Flags (0x20429ce1) SM SPT REG L2REG LSRC HW FAST TAG
     fast ports: ethe 2/1/11
     AgeSltMsk: 1, L2 FID: 4188, DIT: 1
     Forwarding_oif: 1, Immediate_oif: 1, Blocked_oif: 0
     L3 (HW) 1:
       TR(e2/1/11,e2/1/11)(VL503), 00:37:26/183, Flags: IM
    Src-Vlan: 170
```

History

Release version	Command history
08.0.50	The output of the command was modified to remove the AvgRate and Profile entries.

show ipv6 pim nsr

Displays the multicast nonstop routing (NSR) status information.

Syntax

show ipv6 pim nsr

Modes

User EXEC mode

Command Output

The **show ipv6 pim nsr** command displays the following information:

TABLE 17

Output Field	Description
NSR	The NSR field indicates whether the command is enabled (ON) or disabled (OFF).
Switchover in Progress Mode	The Switchover in Progress Mode field indicates whether the multicast traffic is in the middle of a switchover (displaying a TRUE status), or not (displaying a FALSE status).
Dy-Sync Postpone Flag	
Dy-Sync Enable Pending Mask	
VLP Up Event Pending Mask	
Hitless Upgrade Retry Count	
NSR base line sync done	

Examples

The following example displays PIM NSR status information.

```
device# show ipv6 pim nsr
Global McastV6 NSR Status
  NSR: ON
  Switchover In Progress Mode : FALSE
  Dy-Sync Postpone Flag       : FALSE
  Dy-Sync Enable Pending Mask : 0x0
  VLP Up Event Pending Mask   : 0x0
  Hitless Upgrade Retry Count : 0x0

NSR base line sync done   : no
```

History

Release version	Command history
10.0.00	This command was introduced.

show ipv6 pim resource

Displays PIM resource information.

Syntax

show ipv6 pim [**all-vrf** | **vrf** *vrf-name*] **resource**

Parameters

all-vrf

Displays information for all virtual routing and forwarding instances (VRFs).

vrf *vrf-name*

Displays information for a particular VRF instance.

Modes

User EXEC mode

Examples

The following example displays output from the **show ipv6 pim resource** command.

```
device> show ipv6 pim resource

Global PIM Parameters :-
GLOBAL Ipv6 MULTICAST CLASS Size:6135 bytes
GLOBAL Ipv6 PIM CLASS Size:2614 bytes
MULTICAST IPV6 CLASS Num alloc:0, System max:129, Size:2932 bytes
PIM IPV6 CLASS  Num alloc:0, System max:129, Size:11156
 Vrf Instance : default-vrf
---------------------------------------
                     alloc in-use  avail get-fail    limit  get-mem  size init
NBR list               256      1    255        0      512        1    96  256
RP set list            256      1    255        0     1536        1    49  256
Static RP                0      0      0        0       64        0    42   64
Anycast RP               0      0      0        0       64        0   190   64
RP Elem               2048      1   2047        0     8192        1    30 2048
LIF Entry                0      0      0        0      512        0    47  512
timer                  256      0    256        0    59392        3    63  256
prune                    0      0      0        0    29696        0    34  128
pimsm J/P elem           0      0      0        0    48960        0    29 1024
Timer Data               0      0      0        0    59392        0    28  256
mcache SLIB Sync         0      0      0        0   296960        0    34 1280
mcache                   0      0      0        0    16384        0  5751  256
graft if no mcache       0      0      0        0    45704        0    64  197
HW replic vlan           0      0      0        0   464000        0    66 2000
HW replic port           0      0      0        0   237568        0    79 1024
Assert Info              0      0      0        0   464000        0    56 2000
pim glb grp              0      0      0        0    59392        0    46  256
pim glb grp/nbr port  1024      1   1023        0   237568        1    12 1024
pim glb grp/nbr vlan  2000      1   1999        0   464000        1    20 2000
pim glb grp src          0      0      0        0    59392        0    24  256
repl entry(Global)    8192      0   8192        0   237568     8192   386 1024
MLD Resources(All Vrfs):
  groups                 0      0      0        0    59392        0  1862  256
  group-memberships      0      0      0        0    59392        0   146  256
  sources                0      0      0        0    59392        0    56  256
  client sources         0      0      0        0    59392        0    84  256
Hardware-related Resources:
 HW IPMC: 0 allocated for MCAST6-ROUTING of total allocated 354
Total (S,G) entries 0
Total SW FWD entries 0
  Total sw w/Tag IPMC entries 0
  Total sw w/Tag invalid IPMC entries 0
Total HW FWD entries 0
  Total hw w/Tag IPMC entries 0
  Total hw w/Tag invalid IPMC entries
```

History

Release version	Command history
08.0.95	The output for this command was enhanced to display more hardware resource information.

show ipv6 pim rp-candidate

Displays candidate rendezvous point (RP) information.

Syntax

show ipv6 pim [**vrf** *vrf-name*] **rp-candidate**

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

Modes

User EXEC mode

Command Output

The **show ipv6 pim rp-candidate** command displays the following information:

Field	Description
Candidate-RP-advertisement in	Indicates how many seconds will pass before the BSR sends its next RP message. **NOTE** This field appears only if this device is a candidate RP.
RP	Indicates the IPv6 address of the RP. **NOTE** This field appears only if this device is a candidate RP.
group prefixes	Indicates the multicast groups for which the RP listed by the previous field is a candidate RP. **NOTE** This field appears only if this device is a candidate RP.
Candidate-RP-advertisement period	Indicates how frequently the BSR sends candidate RP advertisement messages. **NOTE** This field appears only if this device is a candidate RP.

Examples

The following example shows information for a candidate RP.

```
device> show ipv6 pim rp-candidate
Next Candidate-RP-advertisement in 00:00:10
  RP: 1be::11:21
    group prefixes:
    ff00:: / 8
  Candidate-RP-advertisement period: 60
```

show ipv6 pim rp-hash

Displays rendezvous-point (RP) information for an IPv6 PIM Sparse group.

Syntax

show ipv6 pim [**vrf** *vrf-name*] **rp-hash** *group-addr*

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

group-addr

Specifies the address of an IPv6 PIM Sparse IP multicast group.

Modes

User EXEC mode

Command Output

The **show ipv6 pim rp-hash** command displays the following information:

Output Field	Description
RP	Indicates the IPv6 address of the RP for the specified IPv6 PIM Sparse group. Following the IPv6 address is the port or virtual interface through which this device learned the identity of the RP.
Info source	Indicates the IPv6 address on which the RP information was received. Following the IPv6 address is the method through which this device learned the identity of the RP.

Examples

The following example shows RP information for an IPv6 PIM Sparse group.

```
device# show ipv6 pim rp-hash ff1e::1:2
  RP: 2001:3e8:255:255::17, v2
    Info source: 2001:3e8:255:255::17, via bootstrap
```

show ipv6 pim rp-map

Displays rendezvous-point (RP)-to-group mapping information.

Syntax

show ipv6 pim [**vrf** *vrf-name*] **rp-map**

Parameters

vrf *vrf-name*

Displays information for the specified VRF instance.

Modes

User EXEC mode

Command Output

The **show ipv6 pim rp-map** command displays the following information:

Output Field	Description
Index	The index number of the table entry in the display.
Group address	Indicates the IPv6 PIM Sparse multicast group address using the listed RP.
RP address	Indicates the Iv6 address of the RP for the listed PIM Sparse group.

Examples

The following example shows RP-to-group mapping.

```
device #show ipv6 pim rp-map
Number of group-to-RP mappings: 3
--------------------------------------------------------------------------------
S.No  Group address   RP address
--------------------------------------------------------------------------------
1     ff07::c:1       3200:12::32
2     ff07::c:2       3200:12::32
3     ff07::c:3       3200:12::32
Number of group-to-RP mappings: 3
```

show ipv6 pim rp-set

Displays rendezvous-point (RP)-set list for the device elected as the bootstrap router (BSR).

Syntax

show ipv6 pim [**all-vrf** | **vrf** *vrf-name*] **rp-set**

Parameters

all-vrf

Displays information for all VRF instances.

vrf *vrf-name*

Displays information for the specified VRF instance.

Modes

User EXEC mode

Command Output

The **show ipv6 pim rp-set** command displays the following information:

Output Field	Description
Number of group prefixes	The number of IPv6 PIM Sparse group prefixes for which the RP is responsible.
Group prefix	Indicates the multicast groups for which the RP listed by the previous field is a candidate RP.
RPs expected or received	Indicates how many RPs were expected and received in the latest Bootstrap message.
RP *num*	Indicates the RP number. If there are multiple RPs in the IPv6 PIM Sparse domain, a line of information for each of them is listed, and they are numbered in ascending numerical order.
priority	The RP priority of the candidate RP. During the election process, the candidate RP with the highest priority is elected as the RP.
age	The age (in seconds) of this RP-set. **NOTE** If this device is not a BSR, this field contains zero. Only the BSR ages the RP-set.

Examples

The following example shows the RP set list.

```
device> show ipv6 pim rp-set
Static RP
---------
Static RP count: 1
100::1
Number of group prefixes Learnt from BSR: 0
No RP-Set present
```

show ipv6 pim rpf

Displays what PIM sees as the best reverse path to the source. While there may be multiple routes back to the source, the one displayed by this command is the one that PIM thinks is best.

Syntax

show ipv6 pim [**vrf** *vrf-name*] **rpf** *ipv6-address* [*group-address*]

Parameters

vrf *vrf-name*

Displays information for a VRF instance.

ipv6-address

Specifies the source IPv6 address for reverse-path forwarding (RPF) check.

group-address

Specifies the group IPv6 address for reverse-path forwarding (RPF) check.

Modes

User EXEC mode

Examples

The following example shows best reverse path to the specified source.

```
device> show ipv6 pim rpf 2008:165::1010
upstream nbr 2006:503::1001 on v503
```

show ipv6 pim sparse

Displays Protocol Independent Multicast (PIM) Sparse configuration information for IPv6, including whether hardware-drop is enabled, and information for PIM Source-Specific Multicast (SSM) range and access control list (ACL) configuration, and route-precedence settings.

Syntax

show ipv6 pim [**vrf** *vrf-name*] **sparse**

Parameters

vrf *vrf-name*

Displays IPv6 PIM information for a virtual routing and forwarding instance (VRF).

Modes

User EXEC mode

Command Output

The **show ipv6 pim sparse** command displays the following information:

Output Field	Displays
Maximum Mcache	Maximum number of multicast cache entries.
Current Count	Number of multicast cache entries used.
Hello interval	How frequently the device sends IPv6 PIM Sparse hello messages to its IPv6 PIM Sparse neighbors. This field shows the number of seconds between hello messages. IPv6 PIM Sparse routers use hello messages to discover one another.
Neighbor timeout	Number of seconds the device waits for a hello message from a neighbor before determining that the neighbor is no longer present and is not removing cached IPv6 PIM Sparse forwarding entries for the neighbor. The default is 105 seconds.
Join/Prune	How frequently the device sends IPv6 PIM Sparse Join or Prune messages for the multicast groups it is forwarding. This field shows the number of seconds between Join or Prune messages. The device sends Join or Prune messages on behalf of multicast receivers that want to join or leave an IPv6 PIM Sparse group. When forwarding packets from IPv6 PIM Sparse sources, the device sends the packets only on the interfaces on which it has received join requests in Join or Prune messages for the source group.
Inactivity interval	Number of seconds a forwarding entry can remain unused before the router deletes it. The default is 180 seconds.
Hardware Drop Enabled	Indicates whether hardware drop is enabled or disabled. To prevent unwanted multicast traffic from being sent to the CPU, PIM Routing and Passive Multicast Route Insertion (PMRI) can be used together to ensure that multicast streams are only forwarded out ports with interested receivers and unwanted traffic is dropped in the hardware on Layer 3 Switches.

Output Field	Displays
Prune Wait Interval	Number of seconds a PIM device waits before stopping traffic to neighbor devices that do not want the traffic. The range is 0 to 3 seconds. The default is 3 seconds.
Bootstrap Msg interval	How frequently the BSR configured on the device sends the RP set to the RPs within the IPv6 PIM Sparse domain, in seconds. The RP set is a list of candidate RPs and their group prefixes. The group prefix of a candidate RP indicates the range of IPv6 PIM Sparse group numbers for which it can be an RP. **NOTE** This field contains a value only if an interface on the device is elected to be the BSR. Otherwise, the field is blank.
Candidate-RP Msg interval	Number of seconds the candidate RP configured on the Layer 3 switch sends candidate RP advertisement messages to the BSR. The default is 60 seconds.
Register Suppress Time	The mean interval between receiving a Register-Stop and allowing registers to be sent again. A lower value means more frequent register bursts at the RP, while a higher value means longer join latency for new receivers. The default is 60 seconds.
Register Probe Time	Number of seconds the PIM router waits for a Register-Stop from an RP before it generates another NULL register to the PIM RP. The default is 10 seconds.
Register Stop Delay	How often a Register-Stop message is displayed. The default is 10 seconds.
Join/Prune Policy	Join and Prune policy configurations.
Register Suppress interval	Number of seconds that it takes the designated router to send Register-encapsulated data to the RP after receiving a Register-Stop message. The default is 60 seconds.
SSM Enabled	If yes, sSource-Specific Multicast (SSM) is configured globally on this router.
SPT threshold	Number of packets the device sends using the path through the RP before switching to the SPT path. The default is 1 packet.
SSM Group Range	Source-Specific Multicast (SSM) group range.
Route Precedence	The route precedence configured to control the selection of routes based on the four route types: • Non-default route from the mRTM • Default route from the mRTM • Non-default route from the uRTM • Default route from the uRTM
Embedded RP Enabled	Indicates whether the embedded RP is enabled or disabled.

Examples

The following example shows whether hardware-drop has been enabled. has been enabled or disabled.

```
device> show ipv6 pim sparse

Global PIM Sparse Mode Settings
  Maximum Mcache         : 4096        Current Count              : 7
  Hello interval         : 30          Neighbor timeout           : 105
  Join/Prune interval    : 60          Inactivity interval        : 180
  Hardware Drop Enabled  : Yes         Prune Wait Interval        : 3
  Bootstrap Msg interval : 60          Candidate-RP Msg interval  : 60
  Register Suppress Time : 60          Register Probe Time        : 10
  Register Stop Delay    : 10          Register Suppress interval : 60
  SSM Enabled            : Yes         SPT Threshold              : 1
  SSM Group Range        : ff3x::/32
  Route Precedence       : mc-non-default mc-default uc-non-default uc-default
  Embedded RP Enabled    : Yes
```

The following examples show the route precedence settings depending on the route-precedence configuration.

```
device(config-ipv6-pim-router)# route-precedence mc-non-default mc-default uc-non-default uc-default
device(config-ipv6-pim-router)# show ipv6 pim sparse

Global PIM Sparse Mode Settings
  Maximum Mcache           : 12992      Current Count                : 2
  Hello interval           : 30         Neighbor timeout             : 105
  Join/Prune interval      : 60         Inactivity interval          : 180
  Hardware Drop Enabled    : Yes        Prune Wait Interval          : 3
  Bootstrap Msg interval   : 60         Candidate-RP Msg interval    : 60
  Register Suppress Time   : 60         Register Probe Time          : 10
  Register Stop Delay      : 10         Register Suppress interval   : 60
  SSM Enabled              : No         SPT Threshold                : 1
  Route Precedence         : mc-non-default mc-default uc-non-default uc-default
  Embedded RP Enabled      : Yes

device(config-ipv6-pim-router)# route-precedence admin-distance
device(config-ipv6-pim-router)# show ipv6 pim sparse

Global PIM Sparse Mode Settings
  Maximum Mcache           : 12992      Current Count                : 2
  Hello interval           : 30         Neighbor timeout             : 105
  Join/Prune interval      : 60         Inactivity interval          : 180
  Hardware Drop Enabled    : Yes        Prune Wait Interval          : 3
  Bootstrap Msg interval   : 60         Candidate-RP Msg interval    : 60
  Register Suppress Time   : 60         Register Probe Time          : 10
  Register Stop Delay      : 10         Register Suppress interval   : 60
  SSM Enabled              : No         SPT Threshold                : 1
  Route Precedence         : admin-distance
  Embedded RP Enabled      : Yes
```

The following example displays PIMv6 Sparse configuration information, including information about the register rate limitations and the register message filter rule.

```
device> show ipv6 pim sparse

Global PIM Sparse Mode Settings
Maximum Mcache             : 2048             Current Count                 : 0
Hello interval             : 30               Neighbor timeout              : 105
Join/Prune interval        : 60               Inactivity interval           : 180
Hardware Drop Enabled      : Yes              Prune Wait Interval           : 3
Bootstrap Msg interval     : 60               Candidate-RP Msg interval     : 60
Register Suppress Time     : 60               Register Probe Time           : 10
Register Stop Delay        : 10               SPT Threshold                 : 1
SSM Enabled                : No
Route Precedence           : uc-non-default uc-default mc-non-default mc-default
Embedded RP Enabled        : Yes
Slow Path Disable All      : No               Slow Path Enable SSM          : No
Slow Path Filter Acl       : None             Register Rate Limit           : 15 pps
                                              Register Filter               :  pim_reg_acl
```

History

Release version	Command history
09.0.10	The output for this command was enhanced to include information about Join and Prune configurations and register rate limitations.

show ipv6 pim traffic

Displays IPv6 PIM traffic statistics.

Syntax

show ipv6 pim traffic [**vrf** *vrf-name*] [**join-prune**] [**rx** | **tx**]

Parameters

vrf *vrf-name*

Specifies information for a VRF instance.

join-prune

Specifies displaying join and prune statistics.

rx

Specifies displaying received PIM traffic statistics.

tx

Specifies displaying transmitted PIM traffic statistics.

Modes

Privileged EXEC mode

Usage Guidelines

PIM control packet statistics for interfaces that are configured for standard PIM are listed first by the display.

Command Output

The **show ipv6 pim traffic** command displays the following information:

Output Field	Description
Port	The port or virtual interface on which the IPv6 PIM interface is configured.
HELLO	The number of IPv6 PIM Hello messages sent or received on the interface.
JOIN-PRUNE	The number of Join or Prune messages sent or received on the interface. **NOTE** Unlike PIM dense, PIM Sparse uses the same messages for Joins and Prunes.
ASSERT	The number of Assert messages sent or received on the interface.
REGISTER GRAFT (DM)	The number of Register messages sent or received on the interface.
REGISTER STOP (SM)	The number of Register Stop messages sent or received on the interface.
BOOTSTRAP MSGS (SM)	The number of bootstrap messages sent or received on the interface.

Output Field	Description
CAND. RP ADV. (SM)	The total number of Candidate-RP-Advertisement messages sent or received on the interface. Register Graft (DM)
Err	The total number of MLD messages discarded, including a separate counter for those that failed the checksum comparison.

Examples

This example shows PIM traffic statistics:

```
Device# show ipv6 pim traffic
Port    HELLO     JOIN-PRUNE  ASSERT    REGISTER  REGISTER  BOOTSTRAP CAND. RP  Err
                                        GRAFT(DM) STOP(SM)  MSGS (SM) ADV. (SM)
-------+---------+-----------+---------+---------+---------+---------+---------+---
       Rx        Rx          Rx        Rx        Rx        Rx        Rx        Rx
------+---------+-----------+---------+---------+---------+---------+---------+---
v170    0         0           0         0         0         0         0         0
v501    0         0           0         0         0         0         0         0
v503    3302      2524        0         0         0         0         0         0
Port    HELLO     JOIN-PRUNE  ASSERT    REGISTER  REGISTER  BOOTSTRAP CAND. RP  Err
                                        GRAFT(DM) STOP(SM)  MSGS (SM) ADV. (SM)
-------+---------+-----------+---------+---------+---------+---------+---------+---
       Tx        Tx          Tx        Tx        Tx        Tx        Tx
------+---------+-----------+---------+---------+---------+---------+---------+---
v170    3576      0           0         0         0         0         0
v501    1456      0           0         0         0         0         0
v503    1456      1314        0         0         0         2         0
```

This example shows the number of received IPv6 PIM Hello packets dropped on interface 1/1/9 to because an ACL to control neighbor access is configured on it.

```
Device#show ipv6 pim traffic rx
Port    HELLO  JN-PRN  ASSERT  REG      REG       BTSTRP     CAND RP  Err
                               GRFT(DM) STOP(SM)  MSGS(SM)   ADV.(SM)

-------+------+------+------+------+---------+----------+-----
        Rx       Rx      Rx     Rx     Rx        Rx        Rx
Rx
-------+-------+------+------+------+------+---------+---------+------
e1/1/1  0       0        0      0      0         0         0      0
e1/1/9  924     0        0      0      0         5         0      914
e1/1/12 0       0        0      0      0         0         0      0
v20     0       0        0      0      0         0         0      0
v60     0       0        0      0      0         0         0      0
v310    0       0        0      0      0         0         0      0
v360    0       0        0      0      0         0         0      0
```

History

Release version	Command history
08.0.20a	This command was modified to display, in the Err column, received Hello packets dropped on an interface because of an ACL to control neighbor access.

show ipv6 pimsm-snooping cache

Displays the downstream PIM join/prune information for both source-path tree (SPT) and rendezvous-point tree (RPT).

Syntax

show ipv6 pimsm-snooping cache [**vlan** *vlan-id*] *ipv6-address* [**resources**]

Parameters

ipv6-address

Specifies the IP address.

vlan *vlan-id*

Specifies snooping for a VLAN.

resources

Specifies PIM SM snooping resources.

Modes

Privileged exec mode

Command Output

The **show ipv6 pimsm-snooping cache** command displays the following information:

Output field	Description
SG	(s,g) downstream fsm state for SPT.
G	(*,g) downstream fsm state for RPT

The **show ipv6 pimsm-snooping cache** command displays the following information only when multi-chassis trunking (MCT) is enabled on the VLAN:

Output field	Description
CCEP	Cluster-client-edge port
CEP	Cluster-edge port
Remote/Local	Join/Prune received on MCT peer or local

Examples

The following example shows PIM SM information.

```
Device#show ipv6 pimsm-snooping cache
 OIF Info:
TR - OIF Belongs to Trunk/LAG, Primary port is displayed
SG - (s,g) downstream fsm state:
G - (*,g) downstream fsm state:
     NI : No Info, J : Join, PP : Prune Pending, CLEAN : cleanup in progress
RPT - (s,g,rpt) downstream fsm state:
     NI : No Info, P : Pruned, PP : Prune Pending, Px : Temp step in (*,G)
     join processing, PPx : Temp State in (*,G) processing, CLEAN : cleanup
     in progress.

PIMSM Snoop cache for vlan 503
1    (* ff7e::1:2:3) Up Time: 03:43:40
                OIF: 1
                TR(e1/1/4) G : J(183) ET: 210, Up Time: 03:43:40

2    (3000::10 ff7e::1:2:3) Up Time: 00:02:52
                OIF: 1
                TR(e1/1/4) SG : J(185) ET: 210, Up Time: 00:02:52
```

The following example shows PIM SM information for a VLAN.

```
Device#show ipv6 pimsm-snooping vlan 503
OIF Info:
TR - OIF Belongs to Trunk/LAG, Primary port is displayed
SG - (s,g) downstream fsm state:
G - (*,g) downstream fsm state:
     NI : No Info, J : Join, PP : Prune Pending, CLEAN : cleanup in progress
RPT - (s,g,rpt) downstream fsm state:
     NI : No Info, P : Pruned, PP : Prune Pending, Px : Temp step in (*,G)
     join processing, PPx : Temp State in (*,G) processing, CLEAN : cleanup
     in progress.

PIMSM Snoop cache for vlan 503
1    (* ff7e::1:2:3) Up Time: 03:43:46
                OIF: 1
                TR(e1/1/4) G : J(177) ET: 210, Up Time: 03:43:46

2    (3000::10 ff7e::1:2:3) Up Time: 00:02:58
                OIF: 1
                TR(e1/1/4) SG : J(179) ET: 210, Up Time: 00:02:58
```

The following example shows PIM SM resource information.

```
Device#show ipv6 pimsm-snooping resources
                      alloc in-use  avail get-fail    limit  get-mem  size init
pimsm group entry      1000      1    999        0   232000        2    64 1000
pimsm source entry     2000      1   1999        0   464000        2    68 2000
pimsm oif entry        2000      1   1999        0   464000        2    89 2000

Total memory in used: 378000 bytes
```

show ipv6 raguard

Displays the Router Advertisement (RA) guard configuration details.

Syntax

show ipv6 raguard { **counts** | **policy**} { *name* | **all** }

show ipv6 raguard whitelist {*number* | **all** }

show ipv6 raguard vlan { *vlan-id* }

Parameters

all

When used with **counts**, **policy**, or **whitelist** keywords, displays the permit or drop counts for all the RA guard policies, configuration of all RA guard policies, or all the associated RA guard whitelists respectively.

counts *name*

Displays the RA guard permit or drop counts for the specified RA guard policy.

policy *name*

Displays the configuration details for the specified RA guard policy.

whitelist *number*

Displays information for the specified RA guard whitelist.

vlan *vlan-id*

Displays RA Guard information for the specified VLAN.

Modes

Privileged EXEC mode

Global configuration mode

Usage Guidelines

The **show ipv6 raguard counts** command is applicable only when logging is enabled for the policy.

Untrusted ports trap packets to the CPU and perform RA guard processing. A trap rule is programmed directly on the unit where the ports are located.

Examples

The following example shows the RA guard drop or permit counts for all RA guard policies:

```
device# show ipv6 raguard counts all
POLICY: policy1
DROPPED-host port: 1
DROPPED-whitelist: 4
DROPPED-prefixlist: 1
DROPPED-max pref: 3
PASSED-trusted port: 0
PASSED-untrusted port: 0
POLICY: policy2
DROPPED-host port: 1
DROPPED-whitelist: 0
DROPPED-prefixlist: 3
DROPPED-max pref: 1
PASSED-trusted port: 0
PASSED-untrusted port: 0
```

The following example shows the details of RA guard policy p1:

```
device# show ipv6 raguard policy p1
policy:p1
        whitelist:1
```

The following example shows all RA guard whitelists:

```
device# show ipv6 raguard whitelist all
whitelist #1 : 3 entries
        permit fe80:db8::db8:10/128
        permit fe80:db8::db8:5/128
        permit fe80:db8::db8:12/128
```

The following example displays output for a VLAN.

```
device# show ipv6 raguard vlan 320
VLAN     Policy
-----    ------
320      policy650
device#
```

History

Release version	Command history
08.0.95	This command was modified to add the **vlan** option.

show ipv6 rip

Shows RIPng configuration information for the device.

Syntax

show ipv6 rip

Modes

Privileged EXEC mode or any configuration mode

Command Output

The **show ipv6 rip** command displays the following information:

Output field	Description
IPv6 RIP status/port	The status of RIPng on the device. Possible status is "enabled" or "disabled." The UDP port number over which RIPng is enabled.
Administrative distance	The setting of the administrative distance for RIPng.
Updates/expiration	The settings of the RIPng update and timeout timers.
Holddown/garbage collection	The settings of the RIPng hold-down and garbage-collection timers.
Split horizon/poison reverse	The status of the RIPng split horizon and poison reverse features. Possible status for each is "on" or "off."
Default routes	The status of RIPng default routes.
Periodic updates/trigger updates	The number of periodic updates and triggered updates sent by the RIPng device.
Distribution lists	The inbound and outbound distribution lists applied to RIPng.
Redistribution	The types of IPv6 routes redistributed into RIPng. The following types of routes can be redistributed: STATIC CONNECTED BGP - BGP4+ OSPF - OSPFv3

Examples

The following example shows settings for RIPng, which is enabled on UDP port 521. Connected, static, OSPFv3, and BGP4+ routes are redistributed through IPv6.

```
device# show ipv6 rip
IPv6 rip enabled, port 521
Administrative distance is 120
Updates every 30 seconds, expire after 180
Holddown lasts 180 seconds, garbage collect after 120
Split horizon is on; poison reverse is off
Default routes are not generated
Periodic updates 5022, trigger updates 10
Distribute List, Inbound : Not set
Distribute List, Outbound
Redistribute: CONNECTED STATIC OSPF BGP
```

show ipv6 rip route

Displays the RIPng routing table.

Syntax

show ipv6 rip route [*ipv6-prefix/prefix-length* | *ipv6-address*]

Parameters

ipv6-prefix/prefix-length

Restricts the display to the entries for the specified IPv6 prefix. You must specify the ipv6-prefix parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. You must specify the prefix-length parameter as a decimal value. A slash mark (/) must follow the ipv6-prefix parameter and precede the prefix-length parameter.

ipv6-address

Restricts the display to the entries for the specified IPv6 address. You must specify this parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373.

Modes

Privileged EXEC mode or any configuration mode

Command Output

The **show ipv6 rip route** command displays the following information:

Output field	Description
IPv6 RIP Routing Table entries	The total number of entries in the RIPng routing table.
ipv6-prefix /prefix-length ipv6-address	The IPv6 prefix and prefix length. The IPv6 address.
Next-hop router	The next-hop router for this device. If :: appears, the route is originated locally.
Interface	The interface name. If "null" appears, the interface is originated locally.
Source of route	The source of the route information. The source can be one of the following: RIP - routes learned by RIPng. CONNECTED - IPv6 routes redistributed from directly connected networks. STATIC - IPv6 static routes are redistributed into RIPng. BGP - BGP4+ routes are redistributed into RIPng. OSPF - OSPFv3 routes are redistributed into RIPng.
Metric number	The cost of the route. The number parameter indicates the number of hops to the destination.
Tag number	The tag value of the route.
Timers	Indicates if the hold-down (aging) timer or the garbage-collection timer is set.

Examples

The following example shows information for a routing table with four entries.

```
device# show ipv6 rip route
IPv6 RIP Routing Table - 4 entries:
ada::1:1:1:2/128, from fe80::224:38ff:fe8f:3000, e 1/3/4
RIP, metric 2, tag 0, timers: aging 17
2001:db8::/64, from fe80::224:38ff:fe8f:3000, e 1/3/4
RIP, metric 3, tag 0, timers: aging 17
bebe::1:1:1:4/128, from ::, null (0)
CONNECTED, metric 1, tag 0, timers: none
cccc::1:1:1:3/128, from fe80::768e:f8ff:fe94:2da, e 2/1/23
RIP, metric 2, tag 0, timers: aging 50
```

show ipv6 route

Displays the IPv6 route table information.

Syntax

show ipv6 route [**vrf** *vrf-nam*] [*ipv6-address* | *ipv6-prefix/prefix-length* | **bgp** | **connect** | **ospf** | **rip** | **static** | **summary**]

Parameters

vrf *vrf-name*

Displays the IPv6 route table information for the specified Virtual Routing and Forwarding (VRF) instance.

ipv6-address

Restricts the display to the entries for the specified IPv6 address. Specify this parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373.

ipv6-prefix/prefix-length

Restricts the display to the entries for the specified IPv6 prefix. Specify the *ipv6-prefix* parameter in hexadecimal using 16-bit values between colons as documented in RFC 2373. Specify the *prefix-length* parameter as a decimal value. A slash mark (/) must follow the *ipv6-prefix* parameter and precede the *prefix-length* parameter.

bgp

Displays Border Gateway Protocol (BGP) routes.

connect

Displays directly attached routes.

ospf

Displays Open Shortest Path First (OSPF) routes.

rip

Displays Routing Information Protocol (RIP) routes.

static

Displays static IPv6 routes.

summary

Displays a summary of the prefixes and different route types.

Modes

Privileged EXEC mode

Command Output

The **show ipv6 route** command displays the following information:

Output field	Description
Number of entries	The number of entries in the IPv6 route table.

Output field	Description
Type	The route type, which can be one of the following entries: • C - The destination is directly connected to the router. • S - The route is a static route. • Sv - The route is an inter-VRF static route. • R - The route is learned from RIPng. • O - The route is learned from OSPFv3. • B - The route is learned from BGP4.
IPv6 Prefix	The destination network of the route.
Next Hop Router	The next-hop router.
Interface	The interface through which this router sends packets to reach the route's destination.
Dis/Metric	The route's administrative distance and metric value.

The **show ipv6 route summary** command displays the following information:

Output field	Description
Number of entries	The number of entries in the IPv6 route table.
Number of route types	The number of entries for each route type.
Number of prefixes	A summary of prefixes in the IPv6 route table, sorted by prefix length.

Examples

The following example displays IPv6 route information.

```
device# show ipv6 route
IPv6 Routing Table - 2 entries:
Type Codes - B:BGP C:Connected L:Local O:OSPF R:RIP S:Static
BGP  Codes - i:iBGP e:eBGP
OSPF Codes - i:Inter Area 1:External Type 1 2:External Type 2
STATIC Codes - d:DHCPv6 v:Inter-VRF
Type IPv6 Prefix           Next Hop Router    Interface     Dis/Metric     Uptime
Sv   22::22/128            100:1:1::10        ve 100        1/1            0m3s
C    200:1:1::/48          ::                 ve 200        0/0            11d13h
```

The following example displays summary information about IPv6 routes.

```
device# show ipv6 route summary
IPv6 Routing Table - 2 entries:
  1 connected, 1 static, 0 RIP, 0 OSPF, 0 BGP
  Number of prefixes:
  /48:1 /128:1
```

History

Release version	Command history
08.0.95	This command was modified to display the details of static inter-VRF routing.

show ipv6 router

Displays information about the IPv6 routers connected to an IPv6 host.

Syntax

show ipv6 router

Modes

User EXEC mode

Usage Guidelines

TheRUCKUS ICX device can function as an IPv6 host, instead of an IPv6 router, if you configure IPv6 addresses on its interfaces but do not enable IPv6 routing using the ipv6 unicast-routing command. From the IPv6 host, you can display information about IPv6 routers to which the host is connected. The host learns about the routers through their router advertisement messages.

If you configure your device to function as an IPv6 router (you configure IPv6 addresses on its interfaces and enable IPv6 routing using the ipv6 unicast-routing command) and then enter the**show ipv6 router** command, you will get a message that there are no IPv6 router in the table.

Command Output

The **show ipv6 router** command displays the following information:

Output field	Description
Router IPv6 address on interface port	The IPv6 address for a particular router interface.
Last update	The amount of elapsed time (in minutes) between the current and previous updates received from a router.
Hops	The default value that should be included in the Hop Count field of the IPv6 header for outgoing IPv6 packets. The hops value applies to the router for which you are displaying information and should be followed by IPv6 hosts attached to the router. A value of 0 indicates that the router leaves this field unspecified.
Lifetime	The amount of time (in seconds) that the router is useful as the default router.
Reachable time	The amount of time (in milliseconds) that a router assumes a neighbor is reachable after receiving a reachability confirmation. The reachable time value applies to the router for which you are displaying information and should be followed by IPv6 hosts attached to the router. A value of 0 indicates that the router leaves this field unspecified.
Retransmit time	The amount of time (in milliseconds) between retransmissions of neighbor solicitation messages. The retransmit time value applies to the router for which you are displaying information and should be followed by IPv6 hosts attached to the router. A value of 0 indicates that the router leaves this field unspecified.

Examples

The following example displays information about the IPv6 routers connected to an IPv6 host.

```
device# show ipv6 router
Router fe80::2e0:80ff:fe46:3431 on Ethernet 50, last update 0 min
Hops 64, Lifetime 1800 sec
Reachable time 0 msec, Retransmit time 0 msec
```

show ipv6 static bfd

Displays information about BFD for IPv6 static routes.

Syntax

show ipv6 static route [**neighbors** | **vrf** *vrf-name*] [*ipv6-address* | **detail**]

Parameters

neighbors

Specifies a BFD neighbor.

vrf *vrf-name*

Specifies a VRF.

ipv6-address

Specifies an IPv6 address.

detail

Specifies detailed information.

Modes

User EXEC mode

Examples

The following is sample output from the **show ipv6 static bfd** command.

```
device> show ipv6 static bfd

BFD Global Information
    Controller: Ready
    HoldTime: No Configuration
    Time[msecs]: No Tx/Rx/Multiplier Configuration
```

The following example shows BFD neighbor information for IPv6 static routes.

```
device> show ipv6 static bfd neighbors

MH: Multi Hop, SH: Single Hop, Mode: P - passive mode [Y/N]
BFD IP Static Information, Number of neighbors in vrf default-vrf: 2
Neighbor                  Local             Interface  Type   P    State
--------                  -----             ---------  ----   -    -----
1000::2                   1000::1           lag 1      SH     N    UP
fe80::4                   fe80::1           lag 1      SH     N    UP
```

History

Release version	Command history
08.0.92	This command was introduced.

show ipv6 static mroute

Displays information for configured IPv6 multicast routes.

Syntax

show ipv6 static mroute [**vrf** *vrf-name* | *ipv6-address-prefix/prefix-length*]

Parameters

vrf *vrf-name*
Specifies a VRF route.

ipv6-address-prefix/prefix-length
Specifies an IPv6 address.

Modes

Privileged EXEC mode

Global configuration mode

Usage Guidelines

Only resolved and best static mroutes are added to the mRTM table. These routes are prefixed with an asterisk in the output from the **show ipv6 static mroute** command.

Examples

Thie following example displays information for configured IPv6 multicast routes:

```
Device(config)# show ipv6 static mroute
IPv6 Static Routing Table - 1 entries:
 IPv6 Prefix                    Interface  Next Hop Router      Met/Dis/Tag Name
*1:1::1:0/120                   ve 90      ::                   1/1/0
```

History

Release version	Command history
08.0.10a	This command was introduced.

show ipv6 static route

Displays information about IPv6 static routes.

Syntax

show ipv6 static route [*ipv6-address* | *ipv6-prefix* | **vrf** *vrf-name*]

Parameters

ipv6-address

Specifies an IPv6 address.

ipv6-prefix

Specifies an IPv6 prefix.

vrf *vrf-name*

Specifies a VRF.

Modes

User EXEC mode

Examples

The following is sample output from the **show ipv6 static route** command.

```
device> show ipv6 static route

IPv6 Static Routing Table - 11 entries:
IPv6 Prefix         Interface  Next Hop Router            Met/Dis/Tag     Name        BFD-State
*1111::/32          -          1000::2                    1/1/0                       NA
 4444::4/128        e 1/1/9    fe80::629c:9fff:fe20:8380  1/1/0                       UP
*5000::/32          lag 1      fe80::4                    1/1/0                       UP
*6000::/32          -          1000::2                    1/1/0                       NA
```

History

Release version	Command history
08.0.92	The command output was modified to include information about IPv6 static routes for BFD.

show ipv6 tcp adjust-mss

Displays the number of TCP SYN/SYN-ACK packets trapped to CPU for MSS modification and number of packets in which MSS is actually modified.

Syntax

show ipv6 tcp adjust-mss [**statistics**[**ethernet** *unit/slot/port* | **tunnel** *num* | **ve** *num* |**lag** *lag-id*]

Parameters

ethernet *unit slot port*

Displays the specified Ethernet interface by unit, slot, and port number.

tunnel *num*

Displays the tunnel interface number.

ve *num*

Displays the Virtual Ethernet interface number.

lag *lag-id*

Displays the lag number.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

LAG configuration mode

Command Output

The **show ipv6 tcp adjust-mss statistics** command displays the following information:

Output field	Description
Interface	The type and the slot and port number of the interface.
Packets-Trapped	Number of packets TCP SYN/SYN-ACK trapped to CPU.
Packets Modified	Number of packets in which MSS is actually modified.

Examples

The following example displays information about all IP interfaces.

```
device# show ipv6 tcp adjust-mss statistics

Total number of IPV6 TCP SYN/SYN-ACK packets Trapped : 0
Total number of IPV6 TCP SYN/SYN-ACK packets Modified : 0
```

The following example displays the **show ipv6 tcp adjust-mss** command.

```
device(config)#show ipv6 tcp adjust-mss
Interface       Configured MSS-Adjust
e 2/1/22        1200
lag 1           1200
ve 100          1200
tunnel 2        1200
```

History

Release version	Command history
08.0.90	The command output was introduced.

show ipv6 tcp connections

Displays general information about each TCP connection on the router, including the percentage of free memory for each of the internal TCP buffers.

Syntax

show ipv6 tcp connections[**all-vrfs**][*port-num*|*ipv6-address*]

Parameters

all-vrfs

Displays all VRFs for all TCP connections.

port-num

Displays the information for the specific port number. Values are SSH:22 TELNET:23 HTTP:80 BGP:179 SSL:443 MSDP:639 LDP: 646.

ipv6-address

Displays information for the specified IPv6 address of the remote device.

Modes

User EXEC mode

Command Output

The **show ipv6 tcp connections** command displays the following information:

Output field	Description
Local IP address:port	The IPv4 or IPv6 address and port number of the local router interface over which the TCP connection occurs.
Remote IP address:port	The IPv4 or IPv6 address and port number of the remote router interface over which the TCP connection occurs.

Output field	Description
TCP state	The state of the TCP connection. Possible states include the following: • LISTEN - Waiting for a connection request. • SYN-SENT - Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED - Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED - Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1 - Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2 - Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT - Waiting for a connection termination request from the local user. • CLOSING - Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK - Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT - Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED - There is no connection state.

Examples

The following sample output from the show ipv6 tcp connections command displays general information about each TCP connection on the router.

```
device# show ipv6 tcp connections
Total 12 TCP connections
   LISTEN: 10; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 2; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 0
Local IPv6 address:port <-> Remote IPv6 address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
::                  21       ::                  0       LISTEN       0       0       0       0
::                  22       ::                  0       LISTEN       0       0       0       0
::                  23       ::                  0       LISTEN       0       0       0       0
::                  24       ::                  0       LISTEN       0       0       0       0
::                  25       ::                  0       LISTEN       0       0       0       0
::                  179      ::                  0       LISTEN       0       0       0       0
::                  443      ::                  0       LISTEN       0       0       0       0
::                  448      ::                  0       LISTEN       0       0       0       0
::                  2024     ::                  0       LISTEN       0       0       0       0
::                  8444     ::                  0       LISTEN       0       0       0       0
3003::10            23       3003::20            42028   ESTABLISHED  0       0       0       0
3003::10            8191     3003::20            179     ESTABLISHED  0       0       0       0
```

History

Release version	Command history
09.0.00	The command was modified to add the **all-vrfs** option. Output was also modified to remove memory usage percentages and add buffer information.

show ipv6 tcp traffic

Displays IPv6 Transmission Control Protocol (TCP) traffic statistics.

Syntax

show ipv6 tcp traffic

Modes

User EXEC mode

Command Output

The **show ipv6 tcp traffic** command displays the following information:

Output field	Description
active opens	The number of TCP connections opened by this device by sending a TCP SYN to another device.
passive opens	The number of TCP connections opened by this device in response to connection requests (TCP SYNs) received from other devices.
failed attempts	This information is used by RUCKUS customer support.
active resets	The number of TCP connections this device reset by sending a TCP RESET message to the device at the other end of the connection.
passive resets	The number of TCP connections this device reset because the device at the other end of the connection sent a TCP RESET message.
input errors	This information is used by RUCKUS customer support.
in segments	The number of TCP segments received by the device.
out segments	The number of TCP segments sent by the device.
retransmission	The number of segments that this device retransmitted because the retransmission timer for the segment had expired before the device at the other end of the connection had acknowledged receipt of the segment.
in connections requests	The number of connection requests received by the device.
out connections requests	The number of connection requests sent by the device.
connections established	The total number of TCP connection established.
acks	The total number acknowledgments received.
duplicate acks	The total number of duplicate acknowledgments received.
duplicate bytes	The total number of TCP packets received with duplicate sequence number.
bad checksum	The total number of TCP packets received with bad checksum.
no checksum	The total number of TCP packets received with no checksum.
invalid header length	The total number of TCP packet received where the header length is less than the minimum header length.
illegal TCP MSS option length	The total number of TCP packets received with an illegal TCP MSS option length.
illegal option	The total number of TCP packets received with an illegal kind for TCP option.
minimum TCP header	The total number of TCP packets received with the length of the packet less than the minimum TCP header length requirement.
invalid segment	TCP invalid segments received.

Output field	Description
TCP-AO Validation failed Segments	Number of TCP segments that failed authentication
TCP-AO mismatch connections overall	Number of TCP connections where authentication send-ID and receive-ID did not match.

Examples

The following is sample output from the **show ipv6 tcp traffic** command.

```
device# show ipv6 tcp traffic
TCP Statistics
  4 current active tcbs, 10 tcbs allocated, 4 tcbs freed 0 tcbs protected
  4 active opens, 4 passive opens, 3 failed attempts
  1 active resets, 0 passive resets, 0 input errors
  372236 in segments, 372233 out segments, 17 retransmission
  4 in connections requests, 6 out connections requests, 4 connections established,
  372226 acks, 0  duplicate acks, 9 duplicate bytes
  0 bad checksum, 5 no checksum, 0 invalid header length
  0 illegal TCP MSS option length, 0 illegal option, 0 minimum TCP header, 0 invalid segment
  4 TCP-AO Validation failed Segments, 0 TCP-AO mismatch connections overall
```

History

Release version	Command history
08.0.95	The command output was enhanced to show more detailed information.
09.0.10	The command output was enhanced to show TCP keychain authentication options (AO).

show ipv6 tcp vrf

Displays information on TCP connections for specified IPv6 VRFs

Syntax

show ipv6 tcp vrf { *name* **connections** } [*ipv6-address*]

Parameters

{ *name* **connections** }

Specifies VRF for which information is displayed.

[*ipv6-address*]

Displays information for the specified IPv6 address of the remote device.

Modes

User EXEC mode

Command Output

The **show ipv6 tcp vrf** command displays the following information:

Output field	Description
Local IP address:port	The IPv4 or IPv6 address and port number of the local router interface over which the TCP connection occurs.
Remote IP address:port	The IPv4 or IPv6 address and port number of the remote router interface over which the TCP connection occurs.
TCP state	The state of the TCP connection. Possible states include the following: • LISTEN - Waiting for a connection request. • SYN-SENT - Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED - Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED - Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1 - Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2 - Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT - Waiting for a connection termination request from the local user. • CLOSING - Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK - Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT - Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED - There is no connection state.

Examples

The following example displays information on TCP connections over IPv6 for the VRF named green.

```
device# show ipv6 tcp vrf green connections
Total 10 TCP connections
   LISTEN: 9; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 1; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 0
Local IPv6 address:port <-> Remote IPv6 address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
::                 21       ::                 0       LISTEN       0       0       0       0
::                 22       ::                 0       LISTEN       0       0       0       0
::                 23       ::                 0       LISTEN       0       0       0       0
::                 24       ::                 0       LISTEN       0       0       0       0
::                 25       ::                 0       LISTEN       0       0       0       0
::                 443      ::                 0       LISTEN       0       0       0       0
::                 448      ::                 0       LISTEN       0       0       0       0
::                 2024     ::                 0       LISTEN       0       0       0       0
::                 8444     ::                 0       LISTEN       0       0       0       0
3003::10           23       3003::20           7117    ESTABLISHED  0       0       0       0
```

The following example displays information on TCP connections over a specific IPv6 address (3003::20) for the VRF named green.

```
device# show ipv6 tcp vrf green connections 3003::20
Total 1 TCP connections
   LISTEN: 0; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 1; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 0
Local IPv6 address:port <-> Remote IPv6 address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
3003::10           23       3003::20           7117    ESTABLISHED  0       0       0       0
```

History

Release version	Command history
09.0.00	This command was introduced.

show ipv6 traffic

Displays IPv6 traffic statistics.

Syntax

show ipv6 traffic

Modes

User EXEC mode

Command Output

The **show ipv6 traffic** command displays the following information:

Output Field	Description
IPv6 Statistics	
received	The total number of IPv6 packets received by the router.
sent	The total number of IPv6 packets originated and sent by the router.
forwarded	The total number of IPv6 packets received by the router and forwarded to other routers.
filtered	The total number of filtered IPv6 packets.
fragmented	The total number of IPv6 packets fragmented by this device to accommodate the MTU of this device or of another device.
reassembled	The total number of fragmented IPv6 packets that this device re-assembled.
bad header	The number of IPv6 packets dropped by the device due to a bad packet header.
delivered	The total number of IPv6 packets delivered to the upper layer protocol.
rawout	This information is used by RUCKUS Technical Support.
bad vers	The number of IPv6 packets dropped by the router because the version number is not 6.
bad scope	The number of IPv6 packets dropped by the router because of a bad address scope.
bad options	The number of IPv6 packets dropped by the router because of bad options.
too many hdr	The number of IPv6 packets dropped by the router because the packets had too many headers.
no route	The number of IPv6 packets dropped by the router because there was no route.
can not forward	The number of IPv6 packets the router could not forward to another router.
redirect sent	This information is used by RUCKUS Technical Support.
frag recv	The number of fragments received by the router.
frag dropped	The number of fragments dropped by the router.
frag timeout	The number of fragment timeouts that occurred.
frag overflow	The number of fragment overflows that occurred.

Output Field	Description
reassembled	The number of fragmented IPv6 packets that the router reassembled.
fragmented	The number of IPv6 packets fragmented by the router to accommodate the MTU of this router or of another device.
ofragments	The number of output fragments generated by the router.
can not frag	The number of IPv6 packets the router could not fragment.
too short	The number of IPv6 packets dropped because they are too short.
too small	The number of IPv6 packets dropped because they do not have enough data.
not member	The number of IPv6 packets dropped because the recipient is not a member of a multicast group.
no buffer	The number of IPv6 packets dropped because there is no buffer available.
forward cache miss	The number of IPv6 packets received for which there is no corresponding cache entry.
ICMP6 statistics Some ICMP statistics apply to both Received and Sent, some apply to Received only, some apply to Sent only, and some apply to Sent Errors only.	
Applies to received and sent	
dest unreach	The number of Destination Unreachable messages sent or received by the router.
pkt too big	The number of Packet Too Big messages sent or received by the router.
time exceeded	The number of Time Exceeded messages sent or received by the router.
param prob	The number of Parameter Problem messages sent or received by the router.
echo req	The number of Echo Request messages sent or received by the router.
echo reply	The number of Echo Reply messages sent or received by the router.
mem query	The number of Group Membership Query messages sent or received by the router.
mem report	The number of Membership Report messages sent or received by the router.
mem red	The number of Membership Reduction messages sent or received by the router.
router soli	The number of Router Solicitation messages sent or received by the router.
router adv	The number of Router Advertisement messages sent or received by the router.
nei soli	The number of Neighbor Solicitation messages sent or received by the router.
nei adv	The number of Neighbor Advertisement messages sent or received by the router.
redirect	The number of redirect messages sent or received by the router.
Applies to received only	
bad code	The number of Bad Code messages received by the router.
too short	The number of Too Short messages received by the router.
bad checksum	The number of Bad Checksum messages received by the router.
bad len	The number of Bad Length messages received by the router.
nd toomany opt	The number of Neighbor Discovery Too Many Options messages received by the router.
badhopcount	The number of Bad Hop Count messages received by the router.

Output Field	Description
Applies to sent only	
error	The number of Error messages sent by the router.
can not send error	The number of times the node encountered errors in ICMP error messages.
too freq	The number of times the node has exceeded the frequency of sending error messages.
Applies to sent errors only	
unreach no route	The number of Unreachable No Route errors sent by the router.
admin	The number of Admin errors sent by the router.
beyond scope	The number of Beyond Scope errors sent by the router.
address	The number of Address errors sent by the router.
no port	The number of No Port errors sent by the router.
pkt too big	The number of Packet Too Big errors sent by the router.
time exceed transit	The number of Time Exceed Transit errors sent by the router.
time exceed reassembly	The number of Time Exceed Reassembly errors sent by the router.
param problem header	The number of Parameter Problem Header errors sent by the router.
nextheader	The number of Next Header errors sent by the router.
option	The number of Option errors sent by the router.
redirect	The number of Redirect errors sent by the router.
unknown	The number of Unknown errors sent by the router.
UDP statistics	
received	The number of UDP packets received by the router.
sent	The number of UDP packets sent by the router.
no port	The number of UDP packets dropped because the packet did not contain a valid UDP port number.
input errors	This information is used by RUCKUS Technical Support.
no data	The total number of UDP packets received with no data.
TCP statistics	
active opens	The number of TCP connections opened by the router by sending a TCP SYN to another device.
passive opens	The number of TCP connections opened by the router in response to connection requests (TCP SYNs) received from other devices.
failed attempts	This information is used by RUCKUS Technical Support.
active resets	The number of TCP connections the router reset by sending a TCP RESET message to the device at the other end of the connection.
passive resets	The number of TCP connections the router reset because the device at the other end of the connection sent a TCP RESET message.
input errors	This information is used by RUCKUS Technical Support.
in segments	The number of TCP segments received by the router.
out segments	The number of TCP segments sent by the router.
retransmission	The number of segments that the router retransmitted because the retransmission timer for the segment had expired before the device at the other end of the connection had acknowledged receipt of the segment.
in connections requests	The number of connection requests received by the device.
out connections requests	The number of connection requests sent by the device.

Output Field	Description
connections established	The total number of TCP connections established.
acks	The total number acknowledgments received.
duplicate acks	The total number of duplicate acknowledgments received.
duplicate bytes	The total number of TCP packets received with duplicate sequence numbers.
bad checksum	The total number of TCP packets received with a bad checksum.
no checksum	The total number of TCP packets received with no checksum.
invalid header length	The total number of TCP packets received where the header length is less than the minimum header length.
illegal TCP MSS option length	The total number of TCP packets received with an illegal TCP MSS option length.
illegal option	The total number of TCP packets received with an illegal kind of TCP option.
minimum TCP header	The total number of TCP packets received with the length of the packet less than the minimum TCP header length requirement.
invalid segment	TCP invalid segments received.

Examples

The following example shows sample output of the **show ipv6 traffic** command.

```
device> show ipv6 traffic

IP6 Statistics
  9423729 received, 34650 sent, 0 forwarded
  0 filtered, 0 fragmented, 0 reassembled, 0 bad header
  0 no route, 0 unknown proto, 0 no buffer, 2477 other errors
ICMP6 Statistics
Received:
  2 total, 0 errors, 0 unreachable, 0 time exceed
  0 parameter, 0 source quench, 0 redirect, 0 echo,
  2 echo reply, 0 timestamp, 0 timestamp reply, 0 addr mask
  0 addr mask reply, 0 irdp advertisement, 0 irdp solicitation
Sent:
  29 total, 0 errors, 18 unreachable, 0 time exceed
  0 parameter, 0 source quench, 0 redirect, 11 echo,
  0 echo reply, 0 timestamp, 0 timestamp reply, 0 addr mask
  0 addr mask reply, 0 irdp advertisement, 0 irdp solicitation

UDP Statistics
  528301 received, 75777 sent, 1091 no port, 0 input errors, 0 no data

TCP Statistics
  0 active opens, 0 passive opens, 0 failed attempts
  1662 active resets, 0 passive resets, 0 input errors
  1662 in segments, 0 out segments, 0 retransmission
  0 in connections requests, 4 out connections requests, 0 connections established,
  0 acks, 0  duplicate acks, 0 duplicate bytes
  0 bad checksum, 0 no checksum, 0 invalid header length
  0 illegal TCP MSS option length, 0 illegal option, 0 minimum TCP header, 0 invalid segment
```

History

Release version	Command history
08.0.95	The command output was modified to show more detailed information for TCP and User Datagram Protocol (UDP) statistics.

show ipv6 tunnel

Displays a summary of IPv6 tunnel information.

Syntax

show ipv6 tunnel [**config**]

Parameters

config

Displays IPv6 tunnel configurations.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show ipv6 tunnel** command displays the following information.

Output field	Description
Tunnel	The tunnel interface number.
Mode	The tunnel mode: • configured: Indicates a manually configured tunnel.
Tunnel Status	The status of the tunnel. • Active: Indicates that tunnel is in active state.
Packet Received	The number of packets received by a tunnel interface. Note that this is the number of packets received by the CPU. It does not include the number of packets processed in hardware.
Packet Sent	The number of packets sent by a tunnel interface. Note that this is the number of packets sent by the CPU. It does not include the number of packets processed in hardware.

Examples

The following is sample output from the **show ipv6 tunnel** command.

```
device# show ipv6 tunnel

IP6 Tunnels
Tunnel        Mode        Tunnel Status Packet Received    Packet Sent
1               configured     Active           0                              0
2               configured     Active           0                              22419
```

show ipv6 tunnel traffic

Displays statistics about IPv6 tunnel traffic.

Syntax

show ipv6 tunnel traffic

Modes

User EXEC mode

Examples

The following is sample output from the **show ipv6 tunnel traffic** command.

```
device> show ipv6 tunnel traffic

IPSEC Tunnels
 Tunnel Status Packet Received Packet Sent Bytes Received Bytes Sent
 1 up/up 85530501 42778752 360787126058 180378526620
 9 up/up 37984 45673 8079092 9180122
 18 up/up 29804 29530 6688012 6435816
…
```

History

Release version	Command history
08.0.70	This command was introduced.

show ipv6 vrrp

Displays information about IPv6 Virtual Router Redundancy Protocol (VRRP) sessions.

Syntax

show ipv6 vrrp [**brief**]

show ipv6 vrrp [**ethernet** *unit/slot/port* | **ve** *num*]

show ipv6 vrrp [**statistics** [**ethernet** *unit/slot/port* | **ve** *num*]]

show ipv6 vrrp [**ve** *num* [**vrid** *VRID*]]

show ipv6 vrrp [**vrid** *VRID* [**ethernet** *unit* / *slot* / *port* | **ve** *num*]]

Parameters

brief

Displays summary information about the IPv6 VRRP session.

ethernet *unit slot port*

Displays IPv6 VRRP information only for the specified Ethernet port. A forward slash "/" must be entered between the *unit*, *slot*, and *port* variables.

ve *num*

Displays IPv6 VRRP information only for the specified virtual Ethernet port.

statistics

Displays statistical information about the IPv6 VRRP session.

vrid *VRID*

Displays IPv6 VRRP information only for the specified virtual router ID (VRID).

Modes

User EXEC mode

Usage Guidelines

This command can be entered in any mode. This command supports IPv6 VRRP; to display information about VRRP Extended (VRRP-E) sessions, use the **show ipv6 vrrp-extended** command.

Command Output

The following is a partial list of output field descriptions for the **show ipv6 vrrp** command.

Output field	Description
Total number of VRRP routers defined	The total number of virtual routers configured and currently running on this RUCKUS ICX device. For example, if the device is running VRRP-E, the total applies only to VRRP-E routers.
Interface	The interface on which VRRP is configured. If VRRP is configured on multiple interfaces, information for each interface is listed separately.

Output field	Description
VRID	The ID of the virtual router configured on this interface. If multiple virtual routers are configured on the interface, information for each virtual router is listed in a separate row.
state	This device's VRRP state for the virtual router. The state can be one of the following: • init—The virtual router is not enabled (activated). If the state remains init after you activate the virtual router, make sure that the virtual router is also configured on the other routers and that the routers can communicate with each other. If the state is init and the mode is incomplete, make sure you have specified the IP address for the virtual router. • backup—This device is a backup for the virtual router. • master—This device is the master for the virtual router.
current priority	The current VRRP priority of this device for the virtual router.
preempt-mode	Whether the backup preempt mode is enabled. If the backup preempt mode is enabled, this field contains a "true." If the mode is disabled, this field is blank.

Examples

The following example displays IPv6 VRRP session information in detail.

```
device(config)# show ipv6 vrrp

Total number of VRRP routers defined: 1
Interface 1/1/3
----------------
auth-type no authentication
VRID 13 (index 2)
interface 1/1/3
state master
administrative-status enabled
version v3
mode non-owner(backup)
virtual mac 0000.5e00.0217
priority 100
current priority 100
track-priority 1
hello-interval 1000 ms
backup hello-interval 60000 ms
advertise backup disabled
dead-interval 3000 ms
preempt-mode true
ipv6-address 3013::1
next hello sent in 700 ms
short-path-forwarding disabled
```

The following example displays IPv6 VRRP statistical information.

```
device# show ipv6 vrrp statistics

Global IPv6 VRRP statistics
-------------------------------
- received vrrp packets with checksum errors = 0
- received vrrp packets with invalid version number = 0
- received vrrp packets with unknown or inactive vrid = 0
Interface 1/1/3
----------------
VRID 13
- number of transitions to backup state = 1
- number of transitions to master state = 1
- total number of vrrp packets received = 0
. received backup advertisements = 19
. received packets with zero priority = 0
. received packets with invalid type = 0
. received packets with invalid authentication type = 0
. received packets with authentication type mismatch = 0
. received packets with authentication failures = 0
. received packets dropped by owner = 0
. received packets with ttl errors = 0
. received packets with ipv6 address mismatch = 0
. received packets with advertisement interval mismatch = 0
. received packets with invalid length = 0
- total number of vrrp packets sent = 1175
. sent backup advertisements = 0
. sent packets with zero priority = 0
- received neighbor solicitation packets dropped = 0
- received proxy neighbor solicitation packets dropped = 0
- received ipv6 packets dropped = 0
```

The following example displays IPv6 VRRP configuration information about VRID 1.

```
device# show ipv6 vrrp vrid 1

Interface 1/1/1
----------------
auth-type no authentication
VRID 1 (index 1)
interface 1/1/1
state master
administrative-status enabled
version v3
mode non-owner(backup)
virtual mac dddd.eeee.ffff (configured)
priority 100
current priority 100
track-priority 1
hello-interval 1000 ms
backup hello-interval 60000 ms
advertise backup disabled
dead-interval 3600 ms
preempt-mode true
ipv6 address 10:20:1::100
next hello sent in 400 ms
```

The following example displays an auto-generated IPv6 virtual link-local address used in the VRRPv3 VRID 1 instance.

NOTE
This example is applicable only to the auto-generation of an IPv6 virtual link-local address.

```
device# show ipv6 vrrp vrid 1

VRID 1 (index 1)
 interface 1/1/1
 state master
 administrative-status enabled
 version v3
 mode owner
 virtual mac 0000.5e00.0101
 virtual link-local fe80::200:5eff:fe00:201
 priority 255
 current priority 255
 track-priority 2
 hello-interval 1000 ms
 backup hello-interval 60000 ms
 number of configured virtual address 2
 ipv6-address 1:2:45::2
 ipv6-address 1:2:46::2
 next hello sent in 300 ms
 Track MCT-VPLS-State: Disable
```

show ipv6 vrrp-extended

Displays information about IPv6 Virtual Router Redundancy Protocol Extended (VRRP-E) sessions.

Syntax

show ipv6 vrrp-extended [**brief**]

show ipv6 vrrp-extended [**ethernet** *unit/slot/port* | **ve** *num*]

show ipv6 vrrp-extended [**statistics** [**ethernet** *unit/slot/port* | **ve** *num*]]

show ipv6 vrrp-extended [**ve** *num* [**vrid** *VRID*]]

show ipv6 vrrp-extended [**vrid** *VRID* [**ethernet** *unit/slot/port* | **ve** *num*]]

Parameters

brief

Displays summary information about the IPv6 VRRP-E session.

ethernet *unit slot port*

Displays IPv6 VRRP information only for the specified Ethernet port. A forward slash "/" must be entered between the *unit*, *slot*, and *port* variables.

statistics

Displays statistical information about the IPv6 VRRP-E session.

ve *num*

Displays IPv6 VRRP-E information only for the specified virtual Ethernet port.

vrid *VRID*

Displays IPv4 VRRP-E information only for the specified virtual-group ID.

Modes

User EXEC mode

Usage Guidelines

Use this command to display information about IPv6 VRRP-E sessions, either in summary or full-detail format. You can also specify a virtual group or interface for which to display output.

This command supports IPv6 VRRP-E. You can modify or redirect the displayed information by using the default Linux tokens (|, >).

Command Output

The **show ipv6 vrrp-extended** command displays the following information:

Output field	Description
Total number of VRRP-E routers defined	The total number of virtual routers configured on this RUCKUS ICX device. **NOTE** The total applies only to the protocol the device is running. For example, if the device is running VRRP-E, the total applies only to VRRP-E routers.
Interface	The interface on which VRRP-E is configured. If VRRP-E is configured on multiple interfaces, information for each interface is listed separately.
VRID	The ID of the virtual router configured on this interface. If multiple virtual routers are configured on the interface, information for each virtual router is listed in a separate row.
Current Priority	The current VRRP-E priority of this device for the virtual router.
Flags	Whether the backup preempt mode is enabled. If the backup preempt mode is enabled, this field contains a "P". If the mode is disabled, this field is blank. • P:Preempt 2:V2 3:V3 • 2: implies VRRP Version2 • 3: implies VRRP Version3
Short-Path-Fwd	This RUCKUS device's VRRP state for the virtual router. The state can be one of the following: • Init—The virtual router is not enabled (activated). If the state remains Init after you activate the virtual router, make sure that the virtual router is also configured on the other routers and that the routers can communicate with each other. **NOTE** If the state is Init and the mode is incomplete, make sure you have specified the IP address for the virtual router. • Backup—This device is a backup for the virtual router. • Master—This device is the master for the virtual router.
Master IP Address	The IPv6 address of the router interface that is currently the Master for the virtual router.
Backup IP Address	The IPv6 addresses of the router interfaces that are currently backups for the virtual router.
Virtual IP Address	The virtual IPv6 address that is being backed up by the virtual router.

Examples

The following example displays summary information for an IPv6 VRRP-E session.

```
device(config)# show ipv6 vrrp-extended brief

Total number of VRRP routers defined: 1
Flags Codes - P:Preempt 2:V2 3:V3 S:Short-Path-Fwd
Intf  VRID  CurrPrio Flags State   Master-IPv6 Backup-IPv6 Virtual-IPv6
                                   Address     Address     Address
-------------------------------------------------------------------
1/1/3  2     100      P3-  Master  Local       3013::2     3013::99
```

The following example displays detailed IPv6 VRRP-E configuration information about VRID 1.

```
device# show ipv6 vrrp-extended vrid 1

Interface 1/1/1
---------------
auth-type md5-authentication
VRID 1 (index 1)
interface 1/1/1
state master
administrative-status enabled
mode non-owner(backup)
virtual mac dddd.eeee.ffff (configured)
priority 100
current priority 100
track-priority 5
hello-interval 1 sec
backup hello-interval 60 sec
advertise backup disabled
dead-interval 0 ms
preempt-mode true
virtual ipv6 address 10:20:1::100
```

show issu errors

Displays stack upgrade error information when an upgrade is in progress.

Syntax

show issu errors

Modes

Privileged EXEC mode

Examples

Use the following command to get ISSU error information.

```
device# show issu errors
ISSU State: UPGRADE ABORT
Abort reason: UNABLE TO UPGRADE UNIT
Unit 1 did not join the stack after upgrade
```

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support for Campus Fabric (SPX) systems was added. (Note: FastIron 9.0.00 and later releases do not support Campus Fabric.)

show issu sequence

Displays the sequence in which units will be upgraded.

Syntax

show issu sequence

Modes

Privileged EXEC mode

Command Output

The **show issu sequence** command displays the following information:

Output field	Description
ID	The stack unit.
Type	Platform and model.
Role	active, member, or standby

History

Release version	Command history
08.0.50	This command was introduced.
08.0.70	Support for Campus Fabric (SPX) systems was added. (Note: FastIron 9.0.00 and later releases do not support Campus Fabric.)

show issu status

Runs a pre-ISSU check and monitors the status of the current upgrade.

Syntax

show issu status

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to show the ISSU status before or during an upgrade.

Examples

If an upgrade is not in progress, this command displays information about whether the system is ready for an upgrade.

```
device# show issu status
Topology is Ring                        Yes
Standby Present                         Yes
Standby ready for upgrade               Yes
Flash use in progress                   No
Secure Setup in progress                No
ISSU in progress or aborted             No
Election pending                        No
Election in progress                    No
Reload pending                          No
CPU utilization high                    No
All units in ready state                Yes
Primary Image is upgrade compatible     Yes
Secondary Image is upgrade compatible   Yes
Startup config and Running Config Same  Yes
User in Config mode                     No
System ready for issu
ISSU not in progress
```

If an upgrade is completed, this command displays the following information,

```
device# show issu status
Last upgrade time                       00:02:19.367 GMT+00 Tue Mar 20 2016
The older image before-ISSU             SPR08050b433.bin
Topology is Ring                        Yes
Standby Present                         Yes
Standby ready for upgrade               Yes
Flash use in progress                   No
Secure Setup in progress                No
ISSU in progress or aborted             No
Election pending                        No
Election in progress                    No
Reload pending                          No
CPU utilization high                    No
All units in ready state                Yes
Primary Image is upgrade compatible     Yes
Secondary Image is upgrade compatible   Yes
Startup config and Running Config Same  Yes
User in Config mode                     No
System ready for issu
ISSU not in progress
```

History

Release version	Command history
08.0.50	This command was introduced.

show keychain

Displays keychain-related configuration and status information.

Syntax

show keychain [**resource** | **tcp** | **mka** | **name** *keychain-name* [*key-id* | **active**]]

Parameters

resource
Displays the number of keychains configured, the status of the keychain timer, and the number of keys configured currently.

tcp
Displays configuration information only for TCP authentication (AO) keychains.

mka
Displays configuration information only for MKA (MACsec) authentication keychains.

name *keychain-name*
Displays the keychain configuration details of a specific keychain.

key-id
Displays the details of a specific key within a keychain.

active
Displays the active keys under a specific keychain.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Keychain configuration mode

Key ID configuration mode

Examples

The following example displays keychain configuration details.

```
device# show keychain

Keychain  : 1
Tolerance : 36000
-------------------------------------------------------------------------------------------------------------
KeyId | Algorithm | SendId | RecvId | SendActive|SendTimer|AcceptActive|AcceptTimer|AoMismatch|TcpOption
-------------------------------------------------------------------------------------------------------------
1     aes-128-cmac  100      100     Yes(Local)   82259    Yes(Local)   118259      YES        YES
2     hmac-sha-1      2        2     No (Local)   47159    No (Local)    47159      YES        YES

Keychain  : 2
Tolerance : 36000
-------------------------------------------------------------------------------------------------------------
KeyId | Algorithm |SendId | RecvId | SendActive|SendTimer|AcceptActive|AcceptTimer|AoMismatch|TcpOption
-------------------------------------------------------------------------------------------------------------
1     aes-128-cmac 100      100     Yes(Local)   82259    Yes(Local)   118259      YES        YES
2     hmac-sha-1     2        2     No (Local)   47159    No (Local)    47159      YES        YES
```

The following example displays the number of keychains configured, the status of the keychain timer, and the number of keys configured currently.

```
device# show keychain resource
Total Keychains Configured: 1
Keychain Timer Operational: Yes
Keychain Resource Infromation:-
                     alloc in-use  avail get-fail    limit  get-mem  size init
Keychain                64      1     63        0       64        1   339   64
Key                    256      2    254        0     1024        2   983  256
Misc                    64      0     64        0      128        0    16   64
```

The following example displays the keychain configuration details of a specific keychain.

```
device# show keychain name 1
Keychain: 1
  Tolerance: 36000
  TCP-AO: TRUE
  Key-id   : 1
      AuthAlgorithm: aes-128-cmac
      Key-String   : *******
      Send-id : 100
      Recv-id : 100
      Include_tcp_options : YES
      Accept-ao-mismatch  : YES
      Send Lifetime:-
          Start    : 09-09-2021 00:01:00 End         : 09-10-2021 12:15:00
          Active   : Yes                 TimeToExpire: 82167 sec
          Timezone : Local
      Accept Lifetime:-
          Start    : 09-09-2021 00:01:00 End         : 09-10-2021 12:15:00
          Active   : Yes                 TimeToExpire: 118167 sec
          Timezone : Local
  Key-id   : 2
      AuthAlgorithm: hmac-sha-1
      Key-String   : *******
      Send-id : 2
      Recv-id : 2
      Include_tcp_options : YES
      Accept-ao-mismatch  : YES
      Send Lifetime:-
          Start    : 09-10-2021 12:30:00 End         : 09-15-2021 20:55:00
          Active   : No                  TimeToActive: 47067 sec
          Timezone : Local
      Accept Lifetime:-
          Start    : 09-10-2021 12:30:00 End         : 09-15-2021 20:55:00
          Active   : No                  TimeToActive: 47067 sec
```

The following example displays the details of a specific key by specifying the key ID within a keychain.

```
device# show keychain name 1 1
Keychain: 1
  Tolerance: 36000
  TCP-AO: TRUE
  Key-id   : 1
      AuthAlgorithm: aes-128-cmac
      Key-String   : *******
      Send-id : 100
      Recv-id : 100
      Include_tcp_options : YES
      Accept-ao-mismatch  : YES
      Send Lifetime:-
          Start    : 09-09-2021 00:01:00 End         : 09-10-2021 12:15:00
          Active   : Yes                 TimeToExpire: 82128 sec
          Timezone : Local
      Accept Lifetime:-
          Start    : 09-09-2021 00:01:00 End         : 09-10-2021 12:15:00
          Active   : Yes                 TimeToExpire: 118128 sec
          Timezone : Local
```

The following example displays the active keys under the "ruckus" keychain.

```
device# show keychain name ruckus active
Keychain: ruckus
 TCP-AO: TRUE
Key-id   : 1
 Auth-Algorithm: hmac-sha-1
    Key-String : *******
    Send-id : 1
    Recv-id : 1
    include-tcp-options : YES
    accept-ao-mismatch : YES
    Send Lifetime:-
    Start : 12-04-2021 11:11:11 End : 12-04-2022 11:11:11
    Active : No TimeToActive: 27583321 sec
    Timezone : Local
    Accept Lifetime:-
    Start : 12-04-2021 11:11:11 End : 12-04-2022 11:11:11
    Active : No TimeToActive: 27583321 sec
    Timezone : Local
```

The following example displays configuration information for TCP authentication keychains.

```
device# show keychain tcp

Keychain  : 1
Tolerance : 36000
-------------------------------------------------------------------------------------------------------------
---------------
KeyId     |  Algorithm  | SendId | RecvId | SendActive | SendTimer | AcceptActive | AcceptTimer |
AoMismatch | TcpOption
-------------------------------------------------------------------------------------------------------------
---------------
1          aes-128-cmac    100      100    Yes(Local)   82233        Yes(Local)     118233
YES        YES
2          hmac-sha-1      2        2      No (Local)   47133        No (Local)     47133
YES        YES

Keychain  : 2
Tolerance : 36000
-------------------------------------------------------------------------------------------------------------
---------------
KeyId     |  Algorithm  | SendId | RecvId | SendActive | SendTimer | AcceptActive | AcceptTimer |
AoMismatch | TcpOption
-------------------------------------------------------------------------------------------------------------
---------------
1          aes-128-cmac    100      100    Yes(Local)   82233        Yes(Local)     118233
YES        YES
2          hmac-sha-1      2        2      No (Local)   47133        No (Local)     47133
YES        YES
```

The following example shows information for MKA (MACsec) authentication keychains only. In the example, only one MKA keychain has been configured. The **show keychain name** command is used to display additional details.

```
device# show keychain mka

Keychain  : sample
Tolerance : 0
-------------------------------------------------------------------------------
  Key-id  |    Algo    | SendActive | SendTimer | AcceptActive | AcceptTimer
-------------------------------------------------------------------------------
    100    aes-128-cmac  Yes(GMT+00)      -        No(GMT+00)          -

device# show keychain name sample
Keychain: sample
  Tolerance: 0
  Key-id   : 100
      AuthAlgorithm: aes-128-cmac
      Key-String   : *******
      Send Lifetime:-
          Start    : 02-16-2022 04:05:00 End         : Infinite
          Active   : Yes                 TimeToExpire: Infinite
          Timezone : GMT+00
```

History

Release	Command History
08.0.70	This command was introduced.
09.0.10	This command was modified to add a TCP option.
09.0.10b	This command was modified to add an MKA option.

show lag

Displays Link Aggregation Group (LAG) information.

Syntax

show lag[*lag-name*|**brief**|**deployed**|**dynamic**|**id***number*|**keep-alive**|**static**]

Parameters

lag-name

Displays information about the LAG specified by name.

brief

Displays the LAG information summary.

deployed

Displays information about all the deployed LAGs.

dynamic

Displays information about dynamic LAGs.

id*number*

Displays information about the LAG specified by the ID number.

keep-alive

Displays information about keep-alive LAGs.

static

Displays information about static LAGs.

Modes

User EXEC mode

Privileged EXEC mode

LAG configuration mode

Command Output

The **show lag** command displays the following information:

Output Field	Description
Total number of LAGS	The total number of LAGs that have been configured on the device.
Total number of deployed LAGS	The total number of LAGs on the device that are currently deployed.
Total number of trunks created	The total number of trunks that have been created on the LAG. The total number of LAGs available is shown also. Because keep-alive LAGs do not use LAG IDs, they are not listed and do not subtract from the number of LAGs available.
LACP System Priority /ID	The system priority configured for the device. The ID is the system priority that is the base MAC address of the device.

Output Field	Description
LACP Long timeout	The number of seconds used for the LACP long timeout mode. This is only applicable for dynamic or keep-alive LAGs.
LACP Short timeout	The number of seconds used for the LACP short timeout mode. This is only applicable for dynamic or keep-alive LAGs.

The following information is displayed per-LAG in the **show lag brief** command:

Output Field	Description
LAG	The name of the LAG, LAG ID number, the configured type of the LAG: static, dynamic, or keep-alive, and the status of LAG deployment (Y/N).

The following information is displayed per-LAG in the **show lag** command for each LAG configured:

Output Field	Description
LAG Configuration	
Ports	The list of ports configured with the LAG.
Port Count	The number of ports configured on the LAG.
Lag Interface	The LAG virtual interface.
Trunk Type	The load-sharing method configured for the LAG. The trunk types are hash-based and resilient-hash.
LACP Key	The link aggregation key for the LAG.

The following information is displayed for the **show lag deployed** command:

Output Field	Description
Deployment	
LAG ID	The LAG ID number.
Active Primary	The port within the LAG where most protocol packets are transmitted. This is not the same as the configured primary port of the LAG.
Port	The chassis slot and port number of the interface.
Link	The status of the link, which can be one of the following values: • up • down
State	The Layer 2 state for the port.
Dupl	The duplex state of the port, which can be one of the following values: • Full • Half • None
Speed	The bandwidth of the interface.
Trunk	The LAG ID of the port.
Tag	Indicates whether the ports have 802.1q VLAN tagging. The value can be Yes or No.
Pri	Indicates the Quality of Service (QoS) priority of the ports. The priority can be a value from 0 through 7.
MAC	The MAC address of the port.
Name	The name (if any) configured for the port.

Output Field	Description
Sys P	Lists the system priority configured for the device.
Port P	Lists the link aggregation priority of the port.
Key	Lists the link aggregation key.
Act	Indicates the link aggregation mode, which can be one of the following values: • No: The mode is passive on the port. If link aggregation is enabled (and the mode is passive), the port can send and receive LACPDU messages to participate in negotiation of an aggregate link initiated by another port, but cannot search for a link aggregation port or initiate negotiation of an aggregate link. • Yes: The mode is active. The port can send and receive LACPDU messages.
Tio	Indicates the timeout value of the port. The timeout value can be one of the following values: • L: Long. The LAG has already been formed and the port is therefore using a longer message timeout for the LACPDU messages exchanged with the remote port. Typically, these messages are used as confirmation of the health of the aggregate link. • S: Short. The port has just started the LACPDU message exchange process with the port at the other end of the link. The S timeout value also can mean that the link aggregation information received from the remote port has expired and the ports are starting a new information exchange.
Agg	Indicates the link aggregation state of the port. The state can be one of the following values: • Agg: Link aggregation is enabled on the port. • No: Link aggregation is disabled on the port.
Syn	Indicates the synchronization state of the port. The state can be one of the following values: • No: The port is out of sync with the remote port. The port does not understand the status of the LACPDU process and is not prepared to enter a LAG link. • Syn: The port is in sync with the remote port. The port understands the status of the LACPDU message exchange process, and therefore knows the LAG to which it belongs, the link aggregation state of the remote port, and so on.
Dis	Indicates the collection state of the port, which determines whether the port is ready to send traffic over the LAG link: • Col: The port is ready to send traffic over the LAG link. • No: The port is not ready to send traffic over the LAG link.
Col	Indicates the distribution state of the port, which determines whether the port is ready to receive traffic over the LAG link: • Dis: The port is ready to receive traffic over the LAG link. • No: The port is not ready to receive traffic over the LAG link.
Def	Indicates whether the port is using default link aggregation values. The port uses default values if it has not received link aggregation information through LACP from the port at the remote end of the link. This field can have one of the following values: • Def: The port has not received link aggregation values from the port at the other end of the link and is therefore using its default link aggregation LACP settings. • No: The port has received link aggregation information from the port at the other end of the link and is using the settings negotiated with that port.
Exp	Indicates whether the negotiated link aggregation settings have expired. The settings expire if the port does not receive an LACPDU message from the port at the other end of the link before the message timer expires. This field can have one of the following values: • Exp: The link aggregation settings this port negotiated with the port at the other end of the link have expired. The port is now using its default link aggregation settings. • No: The link aggregation values that this port negotiated with the port at the other end of the link have not expired. The port is still using the negotiated settings.

Output Field	Description
Ope	Indicates the operational state of the LAG. This field can have one of the following values: • Ope (operational): The port is operating normally. • Blo (blocked): The port is blocked because the adjacent port is not configured with link aggregation or because it is not able to join a LAG. An LACP port is blocked until it becomes part of a LAG. Also, an LACP port is blocked if its state becomes "default". To unblock the port and bring it to an operational state, enable link aggregation on the adjacent port and ensure that the ports have the same key. • Frc (force-up): The port is in "force-up" mode. If you have configured the **force-up ethernet** command on the member port of a dynamic LAG, the port goes into "force-up" mode and is logically operational when the dynamic LAG is not operating. • Err: If there is a peer information mismatch, then that particular port is moved to the Error disable state (Err).
Port	The chassis slot and port number of the interface.
Partner System ID	The partner system ID indicating the system priority and the MAC address of the port.
Partner Key	The partner key value. Valid key values range from 1 through 65535.
LACP Rx Count	This is the counter for LACPDUs received on this port.
LACP Tx Count	This is the counter for LACPDUs transmitted from this port.

Examples

The following example shows sample output of the **show lag** command. Information displayed is in sequential order by LAG ID.

```
device# show lag
Total number of LAGs:          2
Total number of deployed LAGs: 2
Total number of trunks created:2 (126 available)
LACP System Priority / ID:     1 / 609c.9fbc.bf14
LACP Long timeout:             90, default: 90
LACP Short timeout:            3, default: 3
=== LAG "tosp12" ID 1 (dynamic Deployed) ===
LAG Configuration:
   Ports:         e 1/1/5 e 1/1/7
   Port Count:    2
   Lag Interface: lg1
   Trunk Type:    hash-based
   LACP Key:      20001
Deployment: HW Trunk ID 1
Port       Link    State   Dupl Speed Trunk Tag Pvid Pri MAC             Name
1/1/5      Down    None    None None  1     No  1    0   609c.9fbc.bf14

1/1/7      Disable None    None None  1     No  1    0   609c.9fbc.bf14

Port       [Sys P] [Port P] [ Key ] [Act][Tio][Agg][Syn][Col][Dis][Def][Exp][Ope]
1/1/5           1        1   20001   Yes   S   Agg  Syn  No   No   Def  No   Dwn
1/1/7           1        1   20001   Yes   S   Agg  Syn  No   No   Def  No   Dwn
 Partner Info and PDU Statistics
Port          Partner         Partner     LACP      LACP
            System ID          Key     Rx Count  Tx Count
1/1/5    1-0000.0000.0000        4        0         0
1/1/7    1-0000.0000.0000        6        0         0
=== LAG "tosp16" ID 2 (static Deployed) ===
LAG Configuration:
   Ports:         e 1/1/6 e 1/1/8
   Port Count:    2
   Lag Interface: lg2
   Trunk Type:    hash-based
Deployment: HW Trunk ID 2
Port       Link    State   Dupl Speed Trunk Tag Pvid Pri MAC             Name
1/1/6      Down    None    None None  2     No  1    0   609c.9fbc.bf14

1/1/8      Down    None    None None  2     No  1    0   609c.9fbc.bf14
```

The following example shows sample output of the **show lag** command with the resilient-hash ("hash-based") trunk type in the LAG configuration.

```
device(config)# show lag id 1
Total number of LAGs:          4
Total number of deployed LAGs: 2
Total number of trunks created:2 (126 available)
LACP System Priority / ID:     1 / 609c.9fbc.bf14
LACP Long timeout:             90, default: 90
LACP Short timeout:            3, default: 3
=== LAG "tosp16" ID 2 (static Deployed) ===
LAG Configuration:
   Ports:         e 1/1/6 e 1/1/8
   Port Count:    2
   Lag Interface: lg2
   Trunk Type:    hash-based
Deployment: HW Trunk ID 2
Port       Link    State   Dupl Speed Trunk Tag Pvid Pri MAC             Name
1/1/6      Down    None    None None  2     No  1    0   609c.9fbc.bf14

1/1/8      Down    None    None None  2     No  1    0   609c.9fbc.bf14
```

History

Release version	Command history
08.0.30d	This command was modified to display a changed output for the **deployed** keyword.
08.0.50	This command was modified to display a changed output for the "resilient-hash" trunk type in the LAG configuration.
08.0.61	This command was modified to include LAG ID options.
08.0.92	This command was modified to display LAG information ordered by LAG ID.

show license

Displays information about Self Authenticated Upgrade licenses installed on a device.

Syntax

show license

Modes

Privileged EXEC mode

Usage Guidelines

The command can be used on a standalone device or on the active controller for a stack.

This command does not display information about XML licenses that were installed on the device in FastIron 08.0.70 or earlier releases.

Command Output

The **show license** command displays the following information:

Output field	Description
Unit	Unit number assigned in the stack. For standalone units, the unit number is 1.
License Name	Name of Software Authenticated Upgrade (SAU) license installed.
L3 Premium	(Yes, No) Indicates whether Layer 3 features are enabled by the license.
Port Speed Upgrade	(Yes, No) Indicates whether the license allows ports to be upgraded from the default speed (1 Gbps).
Speed	Speed to which ports covered by the license can be upgraded (10 Gbps).
Ports	Indicates the number of ports covered by the license.
MACsec	Indicates whether a MACsec license is installed.

Examples

The following example shows a 2x10G license installed on stack unit 1. Stack unit 2 has 8x10G and Layer 3 Premium licenses.

```
device# show license installed
Unit  License Name      L3 Premium  Port Speed Upgrade Speed    Ports   MACsec
1      L3-PREM-2X10G    Yes         Yes                10G      2       NA
2      L3-PREM-8x10G    Yes         Yes                10G      8       NA
```

History

Release version	Command history
08.0.80	This command was enhanced to support all ICX platforms that support SAU licensing.
08.0.61	This command was introduced.

show license installed

Displays detailed information about Self Authenticated Upgrade licenses installed on a device.

Syntax

show license installed

Modes

Privileged EXEC mode

Usage Guidelines

The command can be used on a standalone device or on the active controller for a stack.

Command Output

The **show license installed** command displays the following information:

Output field	Description
Unit	Unit number assigned in the stack. For standalone units, the unit number is 1.
License Name	Name of Software Authenticated Upgrade (SAU) license installed.
L3 Premium	(Yes, No) Indicates whether Layer 3 features are enabled by the license.
Port Speed Upgrade	(Yes, No) Indicates whether the license allows ports to be upgraded from the default speed (1 Gbps).
Speed	Speed to which ports covered by the license can be upgraded (10 Gbps).
Ports	Indicates the number of ports covered by the license.
MACsec	Indicates whether a MACsec license is installed.

History

Release version	Command history
08.0.61	This command was introduced.
08.0.80	This command was enhanced to support all ICX platforms that support SAU licensing.

show license unit

Displays general information about all software licenses on a device.

Syntax

show license unit*unit_id*

Parameters

unit_id

Indicates the unit ID number. The *unit_id* can be from 1 through 12.

Modes

Privileged EXEC level.

Usage Guidelines

The command can be used to display SAU software licensing information for a specified unit on a device.

Command Output

The **show license unit** command displays the following information:

Output field	Description
Unit	Unit number assigned in the stack. For standalone units, the unit number is 1.
License Name	Name of Software Authenticated Upgrade (SAU) license installed.
L3 Premium	(Yes, No) Indicates whether Layer 3 features are enabled by the license.
Port Speed Upgrade	(Yes, No) Indicates whether the license allows ports to be upgraded from the default speed (1 Gbps).
Speed	Speed to which ports covered by the license can be upgraded (10 Gbps).
Ports	Indicates the number of ports covered by the license.
MACsec	Indicates whether a MACsec license is installed.
License Capacity	The port capacity of the Ports of Demand (PoD) license.

Examples

The following **show license unit** command output displays information about the SAU licenses licenses on the device. Hardware license information is not displayed.

```
device# show license unit 1
Unit License Name    L3 Premium   Port Speed Upgrade  Speed    Ports  MACSec
1     L3-PREM-8X10G   Yes         Yes                 10G      8      NA
```

History

Release	Command History
09.0.00	The **index** keyword was deprecated. Serial number, LID, Index, and other fields were removed from the output.

show link-error-disable

Displays the ports that are enabled with the port flap dampening feature.

Syntax

show link-error-disable [**all**]

Parameters

all

Displays all ports with the port flap dampening feature enabled.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

Ports that have been disabled due to the port flap dampening feature are identified in the output of the **show link-error-disable** command.

Command Output

The **show link-error-disable** command displays the following information.

Output field	Description
Port	Specifies the port number.
threshold	The number of times that the port link state goes from up to down and down to up before the wait period is activated.
sampling_period	The number of seconds during which the specified toggle threshold can occur before the wait period is activated.
waiting_period	The number of seconds during which the port remains disabled (down) before it becomes enabled.

Examples

The following is sample output from the **show link-error-disable all** command.

```
device# show link-error-disable all

Port1/1/1 is configured for link-error-disable
            threshold:1, sampling_period:10, waiting_period:0
Port1/1/2 is configured for link-error-disable
            threshold:1, sampling_period:10, waiting_period:0
Port1/1/3 is configured for link-error-disable
            threshold:1, sampling_period:10, waiting_period:0
Port1/1/4 is configured for link-error-disable
            threshold:1, sampling_period:10, waiting_period:0
Port1/1/5 is configured for link-error-disable
            threshold:4, sampling_period:10, waiting_period:2
Port1/1/9 is configured for link-error-disable
            threshold:2, sampling_period:20, waiting_period:0
```

show link-keepalive

Displays the UDLD information.

Syntax

show link-keepalive [**ethernet** *stackid/slot/port*]

Parameters

ethernet *stackid/slot/port*

Displays UDLD information for the specified Ethernet port.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show link-keepalive** command displays the following information:

Output field	Description
Total link-keepalive enabled ports	The total number of ports on which UDLD is enabled.
Keepalive Retries	The number of times a port will attempt the health-check before concluding that the link is down.
Keepalive Interval	The number of seconds between health check packets.
Port	The port number.
Physical Link	The state of the physical link. This is the link between the RUCKUS port and the directly connected device.
Logical Link	The state of the logical link. This is the state of the link between this port and the port on the other end of the link.
State	The traffic state of the port.
Link-vlan	The ID of the tagged VLAN in the UDLD packet.

The **show link-keepalive ethernet** command displays the following information:

Output field	Description
Current State	The state of the logical link. This is the link between this port and the port on the other end of the link.
Remote MAC Addr	The MAC address of the port or device at the remote end of the logical link.
Local Port	The port number on this device.
Remote Port	The port number on the device at the remote end of the link.
Local System ID	A unique value that identifies this device. The ID can be used by RUCKUS technical support for troubleshooting.
Remote System ID	A unique value that identifies the device at the remote end of the link.

Output field	Description
Packets sent	The number of UDLD health-check packets sent on this port.
Packets received	The number of UDLD health-check packets received on this port.
Transitions	The number of times the logical link state has changed between up and down.
Port blocking	Information used by RUCKUS technical support for troubleshooting.
Link-vlan	The ID of the tagged VLAN in the UDLD packet.
BM disabled	Information used by RUCKUS technical support for troubleshooting.

Examples

The following example shows the UDLD information for all ports.

```
device# show link-keepalive
Total link-keepalive enabled ports: 4
Keepalive Retries: 3    Keepalive Interval: 1 Sec.
Port    Physical Link   Logical Link    State           Link-vlan
1/1/1     up              up            FORWARDING      3
1/1/2     up              up            FORWARDING
1/1/3     down            down          DISABLED
1/1/4     up              down          DISABLED
```

The following example show the UDLD information for a specific port.

```
device# show link-keepalive ethernet 1/4/1
Current State    : up            Remote MAC Addr  : 0000.00d2.5100
Local Port       : 1/4/1         Remote Port      : 1/2/1
Local System ID : e0927400       Remote System ID : e0d25100
Packets sent     : 254           Packets received : 255
Transitions      : 1             Link-vlan        : 100
```

show link-oam info

Displays the OAM information on EFM-OAM-enabled ports.

Syntax

show link-oam info [**detail** [**ethernet** *stackid/slot/port* [[**to** *stackid/slot/port*] [**ethernet** *stackid/slot/port*]...]]]

Parameters

detail

Displays detailed EFM-OAM information.

ethernet

Displays the detailed EFM-OAM information for a specific Ethernet interface.

stackid/slot/port

Specifies the interface details.

to

Configures a range of interfaces.

Modes

Privileged EXEC mode

Global configuration mode

EFM-OAM protocol configuration mode

Command Output

The **show link-oam info** command displays the following information:

Output field	Description
Ethernet	Displays the interface details
Link Status	Displays the status of the link (up or down)
OAM Status	Displays the status of OAM
Mode	Displays the operational mode of EFM-OAM
Local Stable	Displays the local OAM status
Remote Stable	Displays the remote OAM status
multiplexer action	Displays the local/remote multiplexer action
parse action	Displays the local/remote parse action
stable	Displays the local/remote OAM status
state	Displays the local/remote EFM-OAM state
loopback support	Indicates whether there is support for loopback for remote/local
dying-gasp	Indicates whether there is support for dying gasp for remote/local
critical-event	Indicates whether there is support for critical-event for remote/local

Output field	Description
link-fault	Indicates whether there is support for link-fault for remote/local

Examples

The following example displays the OAM information on all EFM-OAM-enabled ports.

```
device(config)# show link-oam info
Ethernet Link Status     OAM Status      Mode       Local Stable    Remote Stable
1/1/1    up              up              active     satisfied       satisfied
1/1/2    up              up              passive    satisfied       satisfied
1/1/3    up              up              active     satisfied       satisfied
1/1/4    up              init            passive    unsatisfied     unsatisfied
1/1/5    down            down            passive    unsatisfied     unsatisfied
1/1/6    down            down            passive    unsatisfied     unsatisfied
1/1/7    down            down            passive    unsatisfied     unsatisfied
```

The following example displays detailed EFM-OAM information on all EFM-OAM-enabled ports.

```
device(config)# show link-oam info detail
OAM information for Ethernet port: 10/1/1
        +link-oam mode:        passive
        +link status:          down
        +oam status:           down
        Local information
                multiplexer action:  forward
                parse action:        forward
                stable:              unsatisfied
                state:               linkFault
                loopback state:      disabled
                dying-gasp:          false
                critical-event:      false
                link-fault:          true
        Remote information
                multiplexer action:  forward
                parse action:        forward
                stable:              unsatisfied
                loopback support:    disabled
                dying-gasp:          false
                critical-event:      true
                link-fault:          false

OAM information for Ethernet port: 10/1/3
        +link-oam mode:        active
        +link status:          up
        +oam status:           down
        Local information
                multiplexer action:  forward
                parse action:        forward
                stable:              unsatisfied
                state:               activeSend
                loopback state:      disabled
                dying-gasp:          false
                critical-event:      false
                link-fault:          false
        Remote information
                multiplexer action:  forward
                parse action:        forward
                stable:              unsatisfied
                loopback support:    disabled
                dying-gasp:          false
                critical-event:      false
                link-fault:          false

OAM information for Ethernet port: 10/1/4
        +link-oam mode:        active
        +link status:          up
        +oam status:           up
        Local information
                multiplexer action:  forward
                parse action:        forward
                stable:              satisfied
                state:               up
                loopback state:      disabled
                dying-gasp:          false
                critical-event:      false
                link-fault:          false
        Remote information
                multiplexer action:  forward
                parse action:        forward
                stable:              satisfied
                loopback support:    disabled
                dying-gasp:          false
                critical-event:      true
                link-fault:          false
```

The following example displays detailed EFM-OAM information on a range of EFM-OAM-enabled ports.

```
device(config)# show link-oam info detail ethernet 1/1/3 to 1/1/8
OAM information for Ethernet port: 1/1/3
        +link-oam mode:        active
        +link status:          up
        +oam status:           up
        Local information
                multiplexer action:  forward
                parse action:        forward
                stable:              satisfied
                state:               up
                loopback state:      disabled
                dying-gasp:          false
                critical-event:      false
                link-fault:          false
        Remote information
                multiplexer action:  forward
                parse action:        forward
                stable:              satisfied
                loopback support:    disabled
                dying-gasp:          false
                critical-event:      false
                link-fault:          false

Link OAM is not enabled on port 1/1/4
Link OAM is not enabled on port 1/1/5
Link OAM is not enabled on port 1/1/6
Link OAM is not enabled on port 1/1/7
Link OAM is not enabled on port 1/1/8
```

History

Release version	Command history
08.0.30	This command was introduced.

show link-oam statistics

Displays the OAM statistics of OAM-enabled ports.

Syntax

show link-oam statistics [**detail** [**ethernet** *stackid/slot/port* [[**to** *stackid/slot/port*] [**ethernet** *stackid/slot/port*]...]]]

Parameters

detail

Displays detailed EFM-OAM statistics.

ethernet

Displays the detailed EFM-OAM statistics of a specific ethernet interface.

stackid/slot/port

Specifies the interface details.

to

Configures a range of interfaces.

Modes

Privileged EXEC mode

Global configuration mode

EFM-OAM protocol configuration mode

Command Output

The **show link-oam statistics** command displays the following information:

Output field	Description
Tx PDUs	Displays the number of PDUs transmitted
Rx PDUs	Displays the number of PDUs received
information OAMPDUs	Displays the number of information OAMPDUs transmitted/received
loopback control OAMPDUs	Displays the number of loopback control OAMPDUs transmitted/received
variable request OAMPDUs	Displays the number of variable request OAMPDUs transmitted/received
variable response OAMPDUs	Displays the number of variable response OAMPDUs transmitted/received
unique event notification OAMPDUs	Displays the number of unique event notification OAMPDUs transmitted/received
duplicate event notification OAMPDUs	Displays the number of duplicate event notification OAMPDUs transmitted/received
organization specific OAMPDUs	Displays the number of organization specific OAMPDUs transmitted/received
link-fault records	Displays the number of link-fault records transmitted/received
critical-event records	Displays the number of critical-event records transmitted/received
dying-gasp records	Displays the number of dying-gasp records transmitted/received
loopback control OAMPDUs dropped	Displays the number of dropped loopback control OAMPDUs

Output field	Description
unsupported OAMPDUs	Displays the number of unsupported OAMPDUs
discarded TLVs	Displays the number of discarded TLVs
unrecognized TLVs	Displays the number of unrecognized TLVs

Examples

The following example displays the OAM statistics on all EFM-OAM-enabled ports.

```
device(config)# show link-oam statistics
Ethernet Tx Pdus         Rx Pdus
10/1/1   377908         377967
10/1/3   400            44
10/1/4   400            385
10/1/5   400            385
10/1/6   400            385
```

The following example displays detailed EFM-OAM statistics on all EFM-OAM-enabled ports.

```
device(config)# show link-oam statistics detail
OAM statistics for Ethernet port: 10/1/1
        Tx statistics
                information OAMPDUs:                    377908
                loopback control OAMPDUs:               0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                link-fault records:                     0
                critical-event records:                 0
                dying-gasp records:                     0
        Rx statistics
                information OAMPDUs:                    377967
                loopback control OAMPDUs:               0
                loopback control OAMPDUs dropped:       0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                unsupported OAMPDUs:                    0
                link-fault records:                     0
                critical-event records:                 377395
                dying-gasp records:                     0
                discarded TLVs:                         0
                unrecognized TLVs:                      0

OAM statistics for Ethernet port: 10/1/3
        Tx statistics
                information OAMPDUs:                    427
                loopback control OAMPDUs:               0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                link-fault records:                     0
                critical-event records:                 0
                dying-gasp records:                     0
        Rx statistics
                information OAMPDUs:                    44
                loopback control OAMPDUs:               0
                loopback control OAMPDUs dropped:       0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                unsupported OAMPDUs:                    0
                link-fault records:                     0
                critical-event records:                 0
                dying-gasp records:                     0
                discarded TLVs:                         0
                unrecognized TLVs:                      0

OAM statistics for Ethernet port: 10/1/4
        Tx statistics
                information OAMPDUs:                    428
                loopback control OAMPDUs:               0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                link-fault records:                     0
                critical-event records:                 0
                dying-gasp records:                     0
```

```
        Rx statistics
                information OAMPDUs:                    413
                loopback control OAMPDUs:               0
                loopback control OAMPDUs dropped:       0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                unsupported OAMPDUs:                    0
                link-fault records:                     0
                critical-event records:                 350
                dying-gasp records:                     0
                discarded TLVs:                         0
                unrecognized TLVs:                      0
```

The following example displays detailed EFM-OAM statistics on a range of EFM-OAM-enabled ports.

```
device(config)# show link-oam statistics detail ethernet 1/1/3 to 1/1/8
OAM statistics for Ethernet port: 1/1/3
        Tx statistics
                information OAMPDUs:                    255390
                loopback control OAMPDUs:               0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                link-fault records:                     0
                critical-event records:                 0
                dying-gasp records:                     0
        Rx statistics
                information OAMPDUs:                    282796
                loopback control OAMPDUs:               0
                loopback control OAMPDUs dropped:       0
                variable request OAMPDUs:               0
                variable response OAMPDUs:              0
                unique event notification OAMPDUs:      0
                duplicate event notification OAMPDUs:   0
                organization specific OAMPDUs:          0
                unsupported OAMPDUs:                    0
                link-fault records:                     0
                critical-event records:                 0
                dying-gasp records:                     0
                discarded TLVs:                         0
                unrecognized TLVs:                      0

Link OAM is not enabled on port 1/1/4
Link OAM is not enabled on port 1/1/5
Link OAM is not enabled on port 1/1/6
Link OAM is not enabled on port 1/1/7
Link OAM is not enabled on port 1/1/8
```

History

Release version	Command history
08.0.30	This command was introduced.

show lldp

Displays a summary of the Link Layer Discovery Protocol (LLDP) configuration settings.

Syntax

show lldp

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show lldp** command displays the following information.

Output field	Description
LLDP transmit interval	The number of seconds between regular LLDP packet transmissions.
LLDP transmit hold multiplier	The multiplier used to compute the actual time-to-live (TTL) value of an LLDP advertisement. The TTL value is the transmit interval multiplied by the transmit hold multiplier.
LLDP transmit delay	The number of seconds that the LLDP agent will wait after transmitting an LLDP frame before transmitting another LLDP frame.
LLDP SNMP notification interval	The number of seconds between transmission of SNMP LLDP traps (lldpRemTablesChange) and SNMP LLDP-MED traps (lldpXMedTopologyChangeDetected).
LLDP reinitialize delay	The minimum number of seconds that the device will wait from when LLDP is disabled on a port, until a request to re-enable LLDP on that port is honored.
LLDP-MED fast start repeat count	The number of seconds between LLDP frame transmissions when an LLDP-MED endpoint is newly detected.
LLDP maximum neighbors	The maximum number of LLDP neighbors for which LLDP data will be retained, per device.
LLDP maximum neighbors per port	The maximum number of LLDP neighbors for which LLDP data will be retained, per port.

Examples

The following is sample output from the **show lldp** command.

```
device# show lldp

LLDP transmit interval             : 10 seconds
LLDP transmit hold multiplier    : 4 (transmit TTL: 40 seconds)
LLDP transmit delay              : 1 seconds
LLDP SNMP notification interval  : 5 seconds
LLDP reinitialize delay          : 1 seconds
LLDP-MED fast start repeat count : 3
LLDP maximum neighbors              : 392
LLDP maximum neighbors per port  : 4
```

Related Commands

show lldp local-info, show lldp neighbors, show lldp statistics

show lldp local-info

Displays the details of the Link Layer Discovery Protocol (LLDP) advertisements that will be transmitted on each port.

Syntax

show lldp local-info *ports* { *all* | *ethernet stack-id/slot/port* [*to stack-id/slot/port* | [*ethernet stack-id/slot/port to stack-id/slot/port* | *ethernet stack-id/slot/port*] ...]}

Parameters

ports
: Displays the details of the LLDP advertisements that will be transmitted on the specified port.

all
: Displays the details of the LLDP advertisements that will be transmitted on all LLDP-enabled ports.

ethernet stack-id/slot/port
: Displays the details of the LLDP advertisements that will be transmitted on the specified Ethernet port.

to stack- id/slot/port
: Displays the details of the LLDP advertisements that will be transmitted on a range of ports.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

The contents of the show output will vary depending on which Threshold Limit Values (TLVs) are configured to be advertised.

If you do not specify any ports or use the **all** keyword, by default, the report shows the local information advertisements for all ports.

Examples

The following is a sample output of the **show lldp local-info** command.

```
device# show lldp local-info

Local port: 1/1/9:1
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.3294
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
  + Port description    : "10GigabitEthernet1/1/9:1"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation supported, but disabled
    Operational MAU type   : Other
  + Link aggregation: aggregated (aggregated port ifIndex: 21)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

Local port: 1/1/9:2
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.3295
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
  + Port description    : "10GigabitEthernet1/1/9:2"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation not supported
    Operational MAU type   : 77
  + Link aggregation: aggregated (aggregated port ifIndex: 21)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

Local port: 1/1/9:3
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.3296
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
  + Port description    : "10GigabitEthernet1/1/9:3"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation not supported
    Operational MAU type   : 162
  + Link aggregation: aggregated (aggregated port ifIndex: 21)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

Local port: 1/1/9:4
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.3297
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
  + Port description    : "10GigabitEthernet1/1/9:4"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation not supported
    Operational MAU type   : b10G1GbasePRXD1
  + Link aggregation: aggregated (aggregated port ifIndex: 21)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

Local port: 1/1/11:1
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.329c
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
```

```
  + Port description    : "10GigabitEthernet1/1/11:1"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation supported, but disabled
    Operational MAU type   : Other
  + Link aggregation: aggregated (aggregated port ifIndex: 29)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

Local port: 1/1/11:2
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.329d
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
  + Port description    : "10GigabitEthernet1/1/11:2"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation not supported
    Operational MAU type   : 162
  + Link aggregation: aggregated (aggregated port ifIndex: 29)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

Local port: 1/1/11:3
  + Chassis ID (MAC address): 0000.0043.4343
  + Port ID (MAC address): cc4e.2438.329e
  + Time to live: 120 seconds
  + System name         : "765026Q-Seth"
  + Port description    : "10GigabitEthernet1/1/11:3"
  + System capabilities : bridge, router
    Enabled capabilities: bridge, router
  + 802.3 MAC/PHY          : auto-negotiation not supported
    Operational MAU type   : b10G1GbasePRXD1
  + Link aggregation: aggregated (aggregated port ifIndex: 29)
  + Maximum frame size: 10200 octets
  + Port VLAN ID: none
  + Management address (IPv4): 10.37.160.43

<<output truncated>>
```

show lldp neighbors

Displays a list of current LLDP neighbors and details of the latest advertisements received from Link Layer Discovery Protocol (LLDP) neighbors.

Syntax

show lldp neighbors[**detail**|**ports**{**all**|**ethernet***stack-id/slot/port* [**to***stack-id/slot/port*|[**ethernet***stack-id/slot/port***to***stack-id/slot/port* | **ethernet***stack-id/slot/port*] ...]}]

Parameters

detail

Displays detailed neighbor data.

ports

Displays the details of the latest advertisements received from LLDP neighbors for the specified port.

all

Displays the details of the latest advertisements received from LLDP neighbors for all LLDP-enabled ports.

ethernet*stack-id/slot/port*

Displays the details of the latest advertisements received from LLDP neighbors for the specified Ethernet port.

to*stack-id/slot/port*

Displays the details of the latest advertisements received from LLDP neighbors for a range of ports.

Modes

User EXEC mode

Command Output

The **show lldp neighbors** command displays the following information.

Output field	Description
Lcl Port	The local LLDP port number.
Chassis ID	The identifier for the chassis. RUCKUS ICX devices use the base MAC address of the device as the Chassis ID.
Port ID	The identifier for the port. RUCKUS ICX devices use the permanent MAC address associated with the port as the port ID.
Port Description	The description for the port. RUCKUS ICX devices use the ifDescr MIB object from MIB-II as the port description.
System Name	The administratively-assigned name for the system. RUCKUS ICX devices use the sysName MIB object from MIB-II, which corresponds to the CLI **hostname** command setting.

Examples

The following is sample output from the **show lldp neighborsdetail** command.

```
device# show lldp neighbors detail ports ethernet 1/1/9:1

Local port: 1/1/9:1
Neighbor  : 748e.f8f9.7489, TTL 92 seconds
    + Chassis ID (MAC address) : 0000.0126.2057
    + Port ID (MAC address)    : 748e.f8f9.7489
    + Time to live             : 120 seconds
    + System name              : "7650Stk-Seth"
    + Port description         : "10GigabitEthernet1/1/10"
    + System capabilities      : bridge, router
      Enabled capabilities     : bridge, router
    + 802.3 MAC/PHY            : auto-negotiation supported, but disabled
      Operational MAU type     : Other
    + Link aggregation         : aggregated (aggregated port ifIndex: 10)
    + Maximum frame size       : 10200 octets
    + Port VLAN ID             : none
    + Management address (IPv4): 10.37.160.126
```

show lldp statistics

Displays Link Layer Discovery Protocol (LLDP) global and per-port statistics.

Syntax

show lldp statistics

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show lldp statistics** command.

```
device# show lldp statistics

Last neighbor change time: 3 hour(s) 37 minute(s) 59 second(s) ago

Neighbor entries added          : 25
Neighbor entries deleted        : 17
Neighbor entries aged out       : 3
Neighbor advertisements dropped : 0

Port       Tx Pkts   Rx Pkts   Rx Pkts   Rx Pkts   Rx TLVs   Rx TLVs Neighbors
             Total     Total  w/Errors Discarded Unrecognz Discarded  Aged Out
1/1/1            0         0         0         0         0         0         0
1/1/2            0         0         0         0         0         0         0
1/1/3            0         0         0         0         0         0         0
1/1/4            0         0         0         0         0         0         0
1/1/5            0         0         0         0         0         0         0
1/1/6            0         0         0         0         0         0         0
1/1/7            0         0         0         0         0         0         0
1/1/8            0         0         0         0         0         0         0
1/1/9:1        523       522         0         0         0         0         0
1/1/9:2        475       476         0         0         0         0         1
1/1/9:3        476       476         0         0         0         0         1
1/1/9:4        475       477         0         0         0         0         1
1/1/10           0         0         0         0         0         0         0
1/1/11:1       510       524         0         0         0         0         0
1/1/11:2       510       524         0         0         0         0         0
1/1/11:3       511       525         0         0         0         0         0
1/1/11:4       510       524         0         0         0         0         0
1/1/12           0         0         0         0         0         0         0
1/1/13           0         0         0         0         0         0         0
1/1/14           0         0         0         0         0         0         0
1/1/15           0         0         0         0         0         0         0
1/1/16           0         0         0         0         0         0         0
1/1/17           0         0         0         0         0         0         0
1/1/18           0         0         0         0         0         0         0
1/1/19           0         0         0         0         0         0         0
1/1/20           0         0         0         0         0         0         0
1/2/1            0         0         0         0         0         0         0
1/2/2            0         0         0         0         0         0         0
1/2/3            0         0         0         0         0         0         0
1/2/4            0         0         0         0         0         0         0
1/2/5            0         0         0         0         0         0         0
1/2/6            0         0         0         0         0         0         0
1/3/1            0         0         0         0         0         0         0
1/3/2            0         0         0         0         0         0         0
1/3/3            0         0         0         0         0         0         0
1/3/4            0         0         0         0         0         0         0
1/3/5            0         0         0         0         0         0         0
1/3/6            0         0         0         0         0         0         0
```

show local-userdb

Displays a list of local user databases configured on the device and the number of users in each database.

Syntax

show local-userdb [*db-name* [*user-name*]]

Parameters

db-name

Displays information for the specified local user database. The database name and the username can be up to 31 characters.

user-name

Displays information for the specified user in the specified user database.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Web Authentication configuration mode

Examples

The following example displays the list of all local user databases and the number of users in each database.

```
device# show local-userdb
==========================================================================
Local User Database Name : My_Database
Number of users in the database : 4
==========================================================================
Local User Database Name : test
Number of users in the database : 3
==========================================================================
Local User Database Name : test123
Number of users in the database : 3
```

The following example displays the details of a particular user database. The passwords are encrypted in the example.

```
device#show local-userdb test
==========================================================================
Local User Database : test
Username           Password
--------           --------
user1              $e$&Z9'%*&+
user2              $e$,)A=)65N,%-3*%1?@U
user3              $e$5%&-5%YO&&A1%6%<@U
```

The following example displays details of a particular user in a specific database.

```
device# show local-userdb db1 user1
Username = user1  Password = $e$%U*V
```

show logging

Displays the Syslog messages in the device local buffer.

Syntax

show logging

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show logging** command displays the following information.

Output field	Description
Syslog logging	The state (enabled or disabled) of the Syslog buffer.
messages dropped	The number of Syslog messages dropped due to user-configured filters. By default, the software logs messages for all Syslog levels. You can disable individual Syslog levels, in which case the software filters out messages at those levels. Each time the software filters out a Syslog message, this counter is incremented.
flushes	The number of times the Syslog buffer has been cleared by the clear logging command or equivalent Web Management Interface option.
overruns	The number of times the dynamic log buffer has filled up and been cleared to hold new entries. For example, if the buffer is set for 100 entries, the 101st entry causes an overrun. After that, the 201st entry causes a second overrun.
level	The message levels that are enabled. Each letter represents a message type and is identified by the key (level code) beneath the value. If you disable logging of a message level, the code for that level is not listed.
messages logged	The total number of messages that have been logged since the software was loaded.
level code	The message levels represented by the one-letter codes.

Examples

The following is sample output from the **show logging** command.

```
device# show logging

    Syslog logging: enabled ( 0 messages dropped, 0 flushes, 0 overruns)
        Buffer logging: level ACDMEINW, 5 messages logged
        level code: A=alert C=critical D=debugging M=emergency E=error
    I=informational N=notification W=warning

    Static Log Buffer:
    Mar 07 15:14:42:I:System: Stack unit 1   Power supply 2  is up

    Dynamic Log Buffer (4000 lines):
    Mar 07 15:18:48:I:conf_archive:Succeeded to full revert <========================== This is message
about revert result
    Mar 07 15:18:47:I:conf_archive:Revert due to revert timeout
    Mar 07 15:17:40:A:Startup Config Parsing Returned Error. Please verify the system configuration.
    Mar 07 15:14:48:I:System: Interface ethernet mgmt1, state up
    Mar 07 15:14:42:I:System: Stack unit 1   Power supply 2  is up
    ICX7850-48FS Router#
```

History

Release version	Command history
09.0.10	The output of this command was modified to include details for Configuration Archive and Replace configurations.

show logging debug

Displays the debug logs maintained in the log manager.

Syntax

show logging debug *module sub-module severity unit-id date-time*

Parameters

module

Displays the logs of a specified module or list of modules (separated by commas). Enter **all** to include all modules.

sub-module

Displays the logs of a specified sub-module or list of sub-modules (separated by commas). Enter **all** if multiple modules are specified. If only a single module is specified, then specify a single sub-module or list of sub-modules (separated by commas) belonging to the module.

severity

Specifies the severity level or list of severity levels (separated by commas) by which logs are displayed. Enter **all** to include all severity levels.

unit-id

Displays the logs of a unit or list of units (separated by commas). Enter "all" to aggregate the result from all units. If none of the units are specified, then logs of the local unit are displayed.

date-time

Displays the logs that are generated after the specified date and time. The format is *month_date_hh:mm:ss:ms*.

Modes

Privileged EXEC mode

Usage Guidelines

If the logs are generated using the debug commands, you must use the exact module names and sub-module names as listed in the log manager hierarchy.

If the logs are generated using distributed logger (dlogger), the modules and sub-modules must be specified based on the mapping of distributed logger modules to log manager displayed in the **show dlogger module filter lm-map** command output.

If a fetch operation is not run or the fetched logs have been cleared, local logs are displayed. That is, to display the local logs, you must run the **logmgr clear-fetched-logs** command first.

Examples

The following example displays all the logs in the fi_debug module from unit 1.

```
device# show logging debug fi_debug all all 1
Jun 02 23:47:31:105503:info:fi_debug:debug_logs:1:3428174176191232: CB hot-swap for unit-id 2, for ACL-
INFRA channel is complete.
Jun 02 23:47:30:377761:info:fi_debug:debug_logs:1:3427486981423872: Write startup-config done.
Jun 02 23:47:29:826189:info:fi_debug:debug_logs:1:7683696493312: Stack unit 2 Power supply 2 is up
Jun 02 23:47:29:824325:info:fi_debug:debug_logs:1:7683696493312: Stack unit 2 Power supply 1 is not
present
Jun 02 23:47:28:741959:info:fi_debug:debug_logs:1:3425794764309248: CB hot-swap for unit-id 2, for
SECURITY-NEW channel is complete.
Jun 02 23:47:28:740548:info:fi_debug:debug_logs:1:3425794764309248: Start CB hot-swap for unit-id 2,
for SECURITY-NEW channel, please do not enter any SECURITY-NEW configurations until complete.
Jun 02 23:47:28:718705:info:fi_debug:debug_logs:1:3425794764309248: Start CB hot-swap for unit-id 2,
for ACL-INFRA channel, please do not enter any ACL-INFRA configurations until complete.
Jun 02 23:37:23:282385:info:fi_debug:debug_logs:1:2962122979934976: CB hot-swap for unit-id 2, for ACL-
INFRA channel is complete.
Jun 02 23:37:21:920196:info:fi_debug:debug_logs:1:7700876362496: Stack unit 2 Power supply 2 is up
Jun 02 23:37:21:918586:info:fi_debug:debug_logs:1:7700876362496: Stack unit 2 Power supply 1 is not
present
Jun 02 23:37:20:821480:info:fi_debug:debug_logs:1:2959451510276864: CB hot-swap for unit-id 2, for
SECURITY-NEW channel is complete.
Jun 02 23:37:20:820061:info:fi_debug:debug_logs:1:2959451510276864: Start CB hot-swap for unit-id 2,
for SECURITY-NEW channel, please do not enter any SECURITY-NEW configurations until complete.
Jun 02 23:37:20:811054:info:fi_debug:debug_logs:1:2959451510276864: Start CB hot-swap for unit-id 2,
for ACL-INFRA channel, please do not enter any ACL-INFRA configurations until complete.
Jun 02 23:29:05:677611:info:fi_debug:debug_logs:1:2598352134865664: FI Init Done Tmr Entered.
Jun 02 22:36:13:612606:info:fi_debug:debug_logs:1:288011916935936: CB hot-swap for unit-id 2, for ACL-
INFRA channel is complete.
Jun 02 22:36:12:028177:info:fi_debug:debug_logs:1:286585987793664: Write startup-config done.
Jun 02 22:36:11:106841:info:fi_debug:debug_logs:1:7786775708416: Stack unit 2 Power supply 2 is up
Jun 02 22:36:11:104190:info:fi_debug:debug_logs:1:7786775708416: Stack unit 2 Power supply 1 is not
present
Jun 02 22:36:10:793337:info:fi_debug:debug_logs:1:285263137866496: CB hot-swap for unit-id 2, for
SECURITY-NEW channel is complete.
Jun 02 22:36:10:790131:info:fi_debug:debug_logs:1:285263137866496: Start CB hot-swap for unit-id 2, for
SECURITY-NEW channel, please do not enter any SECURITY-NEW configurations until complete.
Jun 02 22:36:10:772841:info:fi_debug:debug_logs:1:285263137866496: Start CB hot-swap for unit-id 2, for
ACL-INFRA channel, please do not enter any ACL-INFRA configurations until complete.
Jun 02 22:29:16:471597:info:fi_debug:debug_logs:1:12884903169: Optics detected on 1/4/1
Jun 02 22:29:16:138768:info:fi_debug:debug_logs:1:12884903169: Optics detected on 1/3/1
Jun 02 22:29:15:854227:info:fi_debug:debug_logs:1:12884903169: Optics detected on 1/2/4
Jun 02 22:29:15:574264:info:fi_debug:debug_logs:1:12884903169: Optics detected on 1/2/3
Jun 02 22:29:15:292614:info:fi_debug:debug_logs:1:12884903169: Optics detected on 1/2/2
```

The following example displays the logs from the stacking sub-module.

```
device# show logging debug infra stacking all all
Jun 02 22:37:11:627414:info:infra:stacking:1:331356726887168: T=8m43.0: Assigned unit 2 to be standby
Jun 02 22:37:11:003027:info:infra:stacking:2:331472691004160: T=1m52.0: Unit 2 is assigned standby by
active u1.
Jun 02 22:36:11:937383:debug:infra:stacking:1:286401304199936: T=7m43.3: Synchronize startup config to
u2
Jun 02 22:36:11:598616:info:infra:stacking:2:8864812499712: Done.
Jun 02 22:36:11:558420:debug:infra:stacking:2:8864812499712: T=52.4: U2 received startup config flash
sync.
Jun 02 22:36:11:455567:info:infra:stacking:2:286684772041472: Downloading - startup-config.txt
Jun 02 22:36:11:454802:info:infra:stacking:2:286684772041472: Download request from active unit 1 mac =
cc4e.248b.a8a8
Jun 02 22:36:10:906739:info:infra:stacking:1:285465001329408: T=7m42.3: Election, I cc4e.248b.a8a8 was
active, no change, ID=1, pri=128, 2U(1-2), A=u1, nbr#=1 1,reason: u1: stk-po-chg,
Jun 02 22:36:10:269633:info:infra:stacking:2:7696581395200: T=51.2: Election, I cc4e.248b.ac90 was
member, no change, ID=2, pri=0, 2U(1-2), A=u1, nbr#=1 1,
Jun 02 22:36:09:860017:info:infra:stacking:2:284979670024960: Unit 2 becomes ready
Jun 02 22:36:08:921496:debug:infra:stacking:1:283871568462592: T=7m40.3: Synchronize webauth files to u2
Jun 02 22:36:08:921219:debug:infra:stacking:1:283871568462592: Detect stack unit 2 has different
startup config flash, will synchronize it
Jun 02 22:36:08:026672:info:infra:stacking:1:283283157943040: T=7m39.4: Election, I cc4e.248b.a8a8 was
alone --> active, ID=1, pri=128, 2U(1-2), A=u1, nbr#=1 1,reason: u2: port-up,
Jun 02 22:36:07:577570:info:infra:stacking:2:5557687681792: T=48.1: Election, I cc4e.248b.ac90 was
member, no change, ID=2, pri=0, 2U(1-2), A=u1, nbr#=1 1,reason: u1: port-up,
Jun 02 22:35:56:980889:info:infra:stacking:2:0: Enable stacking. This unit actively participates in
stacking
Jun 02 22:33:35:256497:debug:infra:stacking:1:348850128683776: T=9m9.7:
stk_dnld_slave_timer_boot(cnt=4) mode=0, boot ty=0 pa=1 spe_relo(0), boot=1,
Jun 02 22:33:30:257189:debug:infra:stacking:1:345504349160192: T=9m4.7: recv_my_role_callback(0): stack
interactive-setup option 3 ID=2, role=3, reason=stack interactive-setup option 3, flash exists, boot=0-
>1
Jun 02 22:33:30:257050:debug:infra:stacking:1:345504349160192: T=9m4.7: set reload_timer, sec=0, chg
sec=5 setup T,
Jun 02 22:33:10:366484:debug:infra:stacking:1:331876417929984: T=8m44.8: stacking_flash_timer: finish
writing flash, close file, rc=0
Jun 02 22:33:10:259091:info:infra:stacking:1:22458383992321: T=8m44.7: Unit 1 (mac=cc4e.248b.ac90)
receives stack interactive-setup option 3 from U1, mac=cc4e.248b.a8a8
ID=2 D0=2/1 to 2/2, D1=2/3 to 2/4, , will reload from Primary in 20 sec
Jun 02 22:33:10:258960:debug:infra:stacking:1:22458383992321: T=8m44.7: write_to_flash(m=0, rm=1)
stacking.boot: sys_flash_fremove rv= -1, sys_flash_fcreat res=3d0002, sys_flash_fwrite(size=661)
ret=661, b_IEEE=1,
Jun 02 22:33:10:258862:debug:infra:stacking:1:22458383992321: T=8m44.7: write stacking.boot t=9 ms:
1:9 , setup timer to close
Jun 02 22:33:10:258650:debug:infra:stacking:1:22458383992321: T=8m44.7: Write stack flash stacking.boot
661 B:
```

History

Release version	Command history
08.0.95	This command was introduced.

show loop-detect no-shutdown-status

Shows the status of interfaces in a loop.

Syntax

show loop-detect no-shutdown-status

Modes

Privileged EXEC mode

Usage Guidelines

Use this command to show the status of the interfaces in a loop.

Command Output

The **show loop-detect no-shutdown-status** command displays the following information:

Output field	Description
Port	The specific interface
Loop status	The duration the port has been in a loop

Examples

The following example shows the ports and their loop statuses.

```
device# show loop-detection no-shutdown-status

loop detection no shutdown syslog interval : 5     (unit 1 min /Default 5 min)
loop detection no shutdown port status     :
Note: Port's loop status gets cleared if loop is not detected in a particular interval window

                Port    ||  Loop Status
      ==================||=========================
       ethernet  1/1/7  ||  (In Loop For 2309 Seconds)
       ethernet  1/1/15 ||  (In Loop For 2309 Seconds
```

History

Release version	Command history
08.0.20	This command was introduced.

show loop-detection resource

Displays the hardware and software resource information about loop detection.

Syntax

show loop-detection resource

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show loop-detection resource** command displays the following information.

Output field	Description
alloc	Memory allocated
in-use	Memory in use
avail	Available memory
get-fail	The number of get requests that have failed
limit	The maximum memory allocation
get-mem	The number of get-memory requests
size	The size of the memory
init	The number of requests initiated

Examples

The following is sample output from the **show loop-detection resource** command.

```
device# show loop-detection resource

Vlans configured loop-detection use 1 HW MAC
Vlans not configured but use HW MAC: 1 10
alloc                   in-use  avail    get-fail  limit   get-mem   size   init
configuration pool 16     6         10       0           3712     6         15          16
linklist pool       16      10        6          0        3712        10        16      16
```

Related Commands

show loop-detection status

show loop-detection status

Displays loop detection status.

Syntax

show loop-detection status

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show loop-detection status** command. If a port is disabled in Strict mode, it shows "ERR-DISABLE by itself." If it is disabled due to its associated VLAN, it shows "ERR-DISABLE by vlan<num>."

```
device# show loop-detection status

loop detection packets interval: 10 (unit 0.1 sec)
Number of err-disabled ports: 3
You can re-enable err-disable ports one by one by "disable" then "enable"
under interface config, re-enable all by "clear loop-detect", or
configure "errdisable recovery cause loop-detection" for automatic recovery

index     port/vlan     status                                #errdis    sent-pkts    recv-pkts
1            1/1/13           untag, LEARNING              0            0                    0
2            1/1/15           untag, BLOCKING              0            0                    0
3            1/1/17           untag, DISABLED              0            0                    0
4         1/1/18         ERR-DISABLE by itself     1            6                1
5            1/1/19           ERR-DISABLE by vlan12     0               0                    0
6            vlan12     ERR-DISABLE ports         2            24               2
```

show lrm-adapter ethernet

Displays the LRM adapter parameters.

Syntax

show lrm-adapter ethernet~{*stackid/slot/port*}~

Modes

User EXEC mode

Usage Guidelines

The command is available only for RUCKUS ICX 7550 10G access ports.

Command Output

The **show lrm-adapter ethernet** command displays the following information:

Output field	Description
MCU Firmware Version	Firmware version of the Micro Controller Unit (MCU).
Power Mode	Power mode of LRM adapter (high or low).
Vendor	Vendor name.
Vendor PN	Vendor part number.
Vendor SN	Vendor serial number.

Examples

The following example displays the LRM parameters on Ethernet port 1/2/4.

```
device> show lrm-adapter ethernet 1/2/4

LRM Adapter on port:1/2/4
=========================
MCU Firmware Version:01.05
Power Mode: High
Vendor: RUCKUS
Vendor PN: 58000007401
Vendor SN: AAF2120900007U5
device#
```

History

Release version	Command history
08.0.61	This command was introduced.

show l2protocol dot1q-tunnel

Displays Q-in-Q BPDU tunnel information.

Syntax

show l2protocol dot1q-tunnel { **counters** [*unit / slot / port* | *lag-id*] | **port** { *unit / slot / port* | *lag-id* } | **summary** | **vlan** *vlan-id* }

Parameters

counters

Displays tunnel counters for all interfaces.

unit / slot / port

Displays tunnel counters for a specific interface.

lag-id

Displays tunnel counters for a LAG virtual interface.

port *unit / slot / port* | *lag-id*

Displays Q-in-Q BPDU tunnel configuration details on an interface or on a LAG virtual interface.

summary

Displays a summary of all ports that have Q-in-Q BPDU tunnel configurations.

vlan *vlan-id*

Displays Q-in-Q PPDU tunnel information of all dot1q-tunnel-enabled interfaces that are part of a specified VLAN.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example displays tunnel counter for each protocol on an interface.

```
device(config)# show l2protocol dot1q-tunnel counters 3/1/1
BPDU Tunnel Counters for 3/1/1:
   STP: Rx(customer)=239514 Tx(customer)=243824 Drop(customer)=0 Forward(service)=239514 Forward
Fail(service)=0
  PVST: Rx(customer)=0 Tx(customer)=0 Drop(customer)=0 Forward(service)=0 Forward Fail(service)=0
  LACP: Rx(customer)=9198 Tx(customer)=8362 Drop(customer)=0 Forward(service)=9198 Forward
Fail(service)=0
  LLDP: Rx(customer)=8181 Tx(customer)=8138 Drop(customer)=0 Forward(service)=8181 Forward
Fail(service)=0
   CDP: Rx(customer)=0 Tx(customer)=0 Drop(customer)=0 Forward(service)=0 Forward Fail(service)=0
   All: Unknown Rx BPDU Drop(service)=0 Tx fail(customer) Drop=0
   All: SVLAN invalid for Rx BPDU (customer) Drop=0
   All: Tag error for Rx BPDU Drop=0
```

The following example displays a summary of all ports that have Q-in-Q BPDU tunnel configurations.

```
device(config)# show l2protocol dot1q-tunnel summary
  BPDU Tunnel original MAC disabled
  BPDU Tunnel MAC =0100.0ccd.cdd1
  BPDU Tunnel CoS =5

  STP Tunnel Ports:  3/1/1 3/1/2 lg1
  LACP Tunnel Ports:  3/1/1 3/1/2
  LLDP Tunnel Ports:  3/1/1 3/1/2 lg1
  CDP Tunnel Ports:  3/1/1 3/1/2 lg1
  Rate limit enabled Ports: None
```

The following example displays Q-in-Q BPDU tunnel configuration details on an interface.

```
device(config)# show l2protocol dot1q-tunnel port 3/1/2
 BPDU Tunnel enabled on 3/1/2 for following protocols
 Protocols: CDP LACP LLDP STP

 STP drop Threshold: 100 pkts/sec
 STP shutdown Threshold: 200 pkts/sec
 STP current Rx Rate: 0 pkts/sec
 STP last Rx Time: 1 second(s) ago

 LACP drop Threshold: Not enabled
 LACP shutdown Threshold: Not enabled
 LLDP drop Threshold: Not enabled
 LLDP shutdown Threshold: Not enabled
 CDP drop Threshold: Not enabled
 CDP shutdown Threshold: Not enabled
 All protocol drop drop Threshold: Not enabled
 All protocol shutdown Threshold: Not enabled
```

The following example displays Q-in-Q BPDU tunnel information of all dot1q-tunnel-enabled interfaces that are part of a specified VLAN.

```
device(config)# show l2p dot1q-tunnel vlan 100
BPDU Tunnel enabled on 3/1/1 for following protocols
 Protocols: CDP LACP LLDP STP

 STP drop Threshold: Not enabled
 STP shutdown Threshold: Not enabled
 LACP drop Threshold: Not enabled
 LACP shutdown Threshold: Not enabled
 LLDP drop Threshold: Not enabled
 LLDP shutdown Threshold: Not enabled
 CDP drop Threshold: Not enabled
 CDP shutdown Threshold: Not enabled
 All protocol drop drop Threshold: Not enabled
 All protocol shutdown Threshold: Not enabled
```

History

Release version	Command history
08.0.70	This command was introduced.

show mac access-lists

Displays information for all Layer 2 (MAC) ACLs.

Syntax

show mac access-lists

show mac access-lists *name*

show mac access-lists bindings

show mac access-lists brief

Parameters

name

Specifies an access list.

bindings

Specifies layer 2 filter bindings.

brief

Specifies summarized information.

Modes

User EXEC

Examples

The following example shows that there are two Layer 2 (MAC) ACLs configured on the device and lists the filters that each ACL applies.

```
device# show mac access-lists
mac access-list mac123: 2 entries
deny 0000.1111.0011 ffff.ffff.ffff any
permit 0000.1111.0033 ffff.ffff.ffff any
mac access-list mac456: 1 entries
permit 1234.5678.9000 ffff.ffff.ffff any
```

The following example displays information for MAC ACL mac456, which indicates that the ACL allows all traffic from IP address 1234.5678.9000. The information also indicates tha the ACL is enabled for logging and mirroring.

```
device# show mac access-lists mac456
mac access-list mac456: 1 entries
log-enable
permit 1234.5678.9000 ffff.ffff.ffff any log mirror
```

History

Release version	Command history
08.0.95	This command was introduced.
09.0.00	This command was modified to accept a MAC ACL name without the preceding **name** keyword.

show mac access-lists bindings

Displays MAC ACL binding information.

Syntax

show mac access-lists { **bindings name** *acl-name* }

show mac access-lists { **bindings interface** { **ethernet** *port* | **lag** *lag-id* } }

Parameters

name *acl-name*

Displays information for the specified ACL.

interface ethernet *port*

Displays binding information for the specified port (unit/slot/port).

interface lag *lag-id*

Displays binding information for the specified LAG.

Modes

All modes

Examples

The following example displays all MAC ACLs for the specified interface (port 1/1/3).

```
device# show mac access-lists bindings interface ethernet 1/1/3
Interface: eth 1/1/3
Inbound Layer 2 ACL:
Mac456
```

The following example lists the interfaces to which the specified MAC ACL (mac456) is bound.

```
device# show mac access-lists bindings name mac456
mac456:
Interface: eth 1/1/3 (Inbound)
Interface: eth 1/1/4 (Inbound)
```

History

Release version	Command history
08.0.95	This command was introduced.

show mac access-lists brief

Displays a list of all MAC ACLs by name.

Syntax

show mac access-lists { **brief** }

Modes

All modes

Examples

The following example displays a list of configured MAC ACLs.

```
device# show mac access-lists brief
Acl Name Num Filters Logging Accounting
mac123    1          EN      DIS
mac345    2          EN      EN
mac789    0          DIS     DIS
Total: 3
```

History

Release version	Command history
08.0.95	This command was introduced.

show mac-address

Displays the MAC address table.

Syntax

show mac-address [**ethernet** *stack/slot/port* | **lag** *lag-id* | **vlan** *vlan-id*][*mac-address* [*mac-address-mask*]]

show mac-address[**all** | **collision** | **mdup-stats** | **statistics** | **vxlan** { **gw** *gw-name* **site** *site-name* | **vni** *vni-id* }]

Parameters

ethernet*stack/slot/port*
: Displays information for the specific Ethernet port.

lag*lag-id*
: Displays information for the specific LAG interface.

vlan*vlan-id*
: Displays the MAC address for the specified VLAN ID.

mac-address
: Displays the information for the specified Ethernet MAC address.

mac-address-mask
: Displays the information for the specified Ethernet MAC address mask.

all
: Displays MAC address of all ports including the blocked ports.

collision
: Displays collision MAC addresses.

mdup-stats
: Displays MAC database update statistics.

statistics
: Displays the MAC address statistics.

vxlan
: Displays VXLAN-specific MAC entries.

gw*gw-name*
: Specifies the VXLAN gateway name for which information is displayed.

site*site-name*
: Displays information for the specified remote site.

vni*vni-id*
: Displays information for the designated VXLAN Network Identifier.

Modes

User EXEC mode

Usage Guidelines

The **show mac-address** command output does not include MAC addresses for management ports, because these ports do not support typical MAC learning and MAC-based forwarding.

Command Output

The **show mac-address** command displays the following information:

Output field	Description
MAC-Address	The MAC address.
Type	Indicates whether the MAC entry is static or dynamic. A static entry is one you create using the **static-mac-address** command. A dynamic entry is one that is learned by the software from network traffic.

Examples

The following example displays sample output of the **show mac-address** command.

```
device> show mac-address

Total active entries from all ports = 3
Total static entries from all ports = 1
MAC-Address       Port        Type      VLAN
0000.0034.1234    1/1/15      Static    1
0000.0038.2f24    1/1/14      Dynamic   1
0000.0038.2f00    1/1/13      Dynamic   1
0000.0086.b159    1/1/10      Dynamic   1
```

The following example displays sample output of the **show mac-address** command for a VLAN.

```
device> show mac-address vlan 1 0000.0000.0001

Total active entries from all ports = 16
MAC-Address       Port     Type      Index
0000.0000.0001    1/1/1      Dynamic   NA
Present in following devices (at hw index) :-
0 (8196 )       4 (8196 )
```

The following example displays two MAC Addresses learned on the VXLAN tunnel with destination IP address 2.2.2.2.

```
device> show mac-address

Total active entries from all ports = 4
MAC-Address     Port         Type        VLAN
000c.2900.0011  1/1/48       Dynamic     101
000c.2900.0022  VxL-2.2.2.2  Dynamic     101
000c.2900.0023  VxL-2.2.2.2  Dynamic     102
000c.2900.0012  1/1/48       Dynamic     102
```

The following example displays information for VLAN 101, in this case a VLAN that is part of a VXLAN segment. The MAC Address of the local access port to the VXLAN tunnel, port 1/1/48, and the MAC address for the remote end of the tunnel, identified by its IP address 2.2.2.2 and the prefix VxL-, are displayed.

```
device> show mac-address vlan 101

Total active entries from VLAN 101 = 2
MAC-Address     Port         Type          VLAN
000c.2900.0011  1/1/48       Dynamic       101
000c.2900.0022  VxL-2.2.2.2  Dynamic       101
```

The following example displays information about MAC address collisions.

```
ICX7850-1-32Q> show mac-address collision

 Total number of collision MAC(s): 000437

 MAC-Address VLAN Port
 0050.0000.7955 40 3/1/48
 0050.0000.74dd 40 3/1/48
 0050.0000.6c88 40 3/1/48
 0050.0000.6ae5 40 3/1/48
 0050.0000.7f9f 40 3/1/48
 0050.0000.79cd 40 3/1/48
 0050.0000.852c 40 3/1/48
 0050.0000.65d0 40 3/1/48
 0013.0002.9012 40 lg1
```

History

Release version	Command history
08.0.40	The following options are removed as they were supported only on FSX devices: **mdup-status**, **mdb**, **source-rbridge***source-rbridgeid*, **client-rbridge***client-rbridgeid*.
08.0.70	The command has been enhanced to display MAC addresses for extended VLANs in a VXLAN segment.
08.0.90	The collision **keyword** was added.

show mac-address cluster

Displays all the MAC address entries for a cluster.

Syntax

show mac-address cluster { *cluster-name* | *cluster-id* } [**vlan** *vlan-id*] [**client** [*client-name* | *client-id*]] [**local** | **remote** [**exclude-interface** | **interface**]]

Parameters

cluster-name
Displays the details for the cluster with the specified cluster name.

cluster-id
Displays the details for the cluster with the specified cluster ID.

vlan *vlan-id*
Displays the details for the VLAN with the specified VLAN ID.

client
Displays the details for the configured client.

client-name
Displays the details for the configured client with the specified client name.

client-id
Displays the details for the configured client with the specified client ID.

local
Displays the cluster local MAC address.

remote
Displays the cluster remote MAC address.

exclude-interface
Displays the MAC address of the remote cluster excluding the interface MAC address of the remote cluster.

interface
Displays the cluster remote interface MAC address.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Cluster configuration mode

Usage Guidelines

The **exclude-interface** and **interface** keywords are available only with the **remote** option. They are not available when the **client** option or the **vlan** option is used. When the **vlan** option is used, you can specify only the client name and not the client ID.

Examples

The following example shows the output of the **show mac-address cluster** command.

```
device# show mac-address cluster 1000
Total Cluster Enabled(CL+CR+CCL+CCR) MACs: 1
Total Cluster Local(CL) MACs: 1
CCL: Cluster Client Local CCR:Cluster Client Remote CL:Local CR:Remote
Total active entries from all ports = 1
Total static entries from all ports = 3
MAC-Address       Port    Type     Index   MCT-Type   VLAN
0000.0022.3333    1/1/1   Static   4254    CML        20
0000.0022.3333    1/1/3   Static   4254    CML        20
0000.0022.3333    1/1/13  Static   4254    CML        20
```

show mac-address mdb

Displays information about the MAC database used in cluster configuration.

Syntax

show mac-address mdb [**source-rbridge** *rbridge-id* **client-rbridge** *client-rbridge-id*]

Parameters

source-rbridge *rbridge-id*

Displays information about MAC database corresponding to a particular source RBridge. Valid values range from 1 through 4095.

client-rbridge *client-rbridge-id*

Displays information about MAC database corresponding to a particular client RBridge. Valid values range from 1 through 4095.

Modes

User EXEC mode

Examples

The following example shows how to display information about the MAC database used in a cluster configuration.

```
device> show mac-address mdb
```

show mac-address debug-distributed

Displays the hardware-programmed MAC address entry from all the stack units.

Syntax

show mac-address debug-distributed *mac-address* **vlan** *vlan-id*

Parameters

mac-address

Displays the information for the specified Ethernet MAC address.

vlan *vlan-id*

Displays the information for the specified VLAN ID.

Modes

All modes.

Usage Guidelines

This command does not support the full hardware MAC address table, all MAC addresses from a specific VLAN, or a single MAC address on multiple VLANs.

This command is not supported on standby units or member units.

Command Output

The **show mac-address debug-distributed** *mac-address* **vlan** *vlan-id* command displays the following information:

Output field	Description
MAC address	The MAC address of the client.
Vlan	The VLAN ID.

Examples

The following example displays sample output of the **show mac-address debug-distributed** command.

```
device# show mac-address debug-distributed 609c.9f52.663a vlan 5

Unit  MAC             Vlan    Modid  Port  L2-flags  L2-flags-decode
 0    609c.9f52.663a     5     0       8   0x010440  Hit
```

History

Release version	Command history
08.0.92	This command was introduced.

show macsec statistics ethernet

Displays status information and secure channel statistics for the designated MACsec interface.

Syntax

show macsec statistics ethernet *unit/slot/port*

Parameters

unit/slot/port

Interface for which MACsec status information is to be displayed. The interface is designated by device number in stack/slot on the device/interface on the slot.

brief

Specifies brief output for all MACsec interfaces.

Modes

User EXEC mode

Usage Guidelines

MACsec commands are supported only on ICX 7650 and ICX 7850 devices.

It is recommended that you use the **clear macsec** command to clear previous results for the **show macsec statistics** command before re-executing it.

Command Output

Output can only be obtained on the active unit.

The **show macsec statistics** command displays the following information:

Output field	Description
Interface (Device/slot/port)	The information that follows describes the designated interface.
Replay Protection (Enabled, Disabled)	Indicates whether replay protection is applied on the interface.
Replay Window (0 through 127)	If out-of-order packets are allowed, indicates allowable window within which an out-of-order packet can be received.
Frame Validation (Enabled, Disabled)	Indicates whether MACsec frame headers are checked.
Secure Channel Statistics:	The fields that follow describe activity on a secure channel established over the designated interface.
TxPktProtectedOnly	Number of transmitted packets with integrity protection only.
TxOctetProtectedOnly	Number of bytes transmitted in packets with integrity protection only.
TxPktEncrypted	Number of transmitted packets that are encrypted.
TxOctetEncrypted	Number of bytes transmitted in encrypted packets.
TxPktMiss	Number of transmitted packets that are neither encrypted nor protected by integrity check.
TxOctetMiss	Number of bytes transmitted in packets that are neither encrypted nor protected by integrity checking.

Output field	Description
TxPktDrop	Number of packets dropped at transmission because SAK has been exhausted.
TxPktBad	Number of transmitted packets marked as bad.
RxPktDecryptedAuth	Number of packets received, decrypted, and checked for integrity protection.
RxOctetTotal	Number of bytes received.
RxOctetAuthOnly	Number of bytes received with Integrity protection only.
RxOctetDecrypted	Number of bytes received and decrypted.
RxPktFailReplayCheck	Number of packets received out of order.
RxPktFailICVCheck	Number of packets received that failed Integrity checking.
RxPktNoMACsecTag	Number of packets received without a MACSec Tag.
RxPktFrameValFail	Number of packets received that failed MACsec frame validation.
RxPktMiss	Number of packets received that did not find a key for decryption.
RxOctetMiss	Number of bytes received that did not find a key for decryption.
RxPktDrop	Number of received packets that were dropped.

History

Release version	Command history
08.0.20	This command was introduced.
08.0.20a	This command was modified. The **show macsec** command name was changed to **show macsec statistics.**
08.0.70	Support for this command was added on ICX 7650 devices. T
08.0.90	Support for this command was added on ICX 7850 devices.

show manager counters

Displays the number of times the Secure Sockets Layer (SSL) server has connected to and disconnected from SmartZone.

Syntax

show manager counters

Modes

Privileged EXEC mode

Examples

The following example displays ICX-Manager counter values.

```
device> show manager counters

HTTPS Server connect to SZ Count         : 1
HTTPS Server connect to SZ fail Count    : 0
SSH Server connect to SZ Count           : 1
SSH Server connect to SZ fail Count      : 0
```

History

Release version	Command history
08.0.80	This command was introduced as **show sz counters**.
08.0.92	The command name was changed to **show manager counters**.
09.0.00	Information about HTTPS and SSH servers appears in the command output.

show manager log

Displays information about the connection between an ICX device and the ICX-Manager.

Syntax

show manager log

Modes

Privileged EXEC mode

Usage Guidelines

The **show manager log** command records switch registrar queries and responses and SmartZone queries and responses and is used to troubleshoot connection issues.

Examples

Enter the following command to display the ICX-Manager log.

```
device# show manager log
```

The following example shows sample output for the **show manager log** command.

```
show manager log

Start i/min/iter 423/0/2
Feb 11 17:58:10:sz_execute_state_machine>Exit with state/event: QUERY/5, TIMER/2002 RC: 1
Feb 11 17:58:10:sz_get_switch_ip_address>IP Addr call returned 0
Feb 11 17:58:10:sz_execute_state_machine>Entering with state/event: QUERY/5, TIMER/2002
Feb 11 17:57:10:sz_execute_state_machine>Exit with state/event: QUERY/5, NONE/2000 RC: 1
Feb 11 17:57:10:sz_get_switch_ip_address>IP Addr call returned 0
Feb 11 17:57:10:select_next_server_port>select default port 443 due to retry: 1 on sz_ip: 10.176.160.116
Feb 11 17:57:10:backup_retry_count: 0
Feb 11 17:57:10:Enter get_ip_from_backup_list() with previous_connected_to_backup_sz: 0
Feb 11 17:57:10:sz_execute_state_machine>Entering with state/event: QUERY/5, NONE/2000
Feb 11 17:57:10:sz_execute_state_machine>Exit with state/event: QUERY/5, NONE/2000 RC: 0
Feb 11 17:57:09:backup_retry_count: 0
Feb 11 17:57:09:Enter get_ip_from_backup_list() with previous_connected_to_backup_sz: 0
Feb 11 17:57:09:sz_execute_state_machine>Entering with state/event: INIT/0, CONF/2006
Feb 11 17:57:09:backup_retry_count: 0
Feb 11 17:57:09:Enter get_ip_from_backup_list() with previous_connected_to_backup_sz: 0
Feb 11 17:42:18:Failed to resolve ruckuscontroller...
Feb 11 17:42:18:Resovling ruckuscontroller with retry: 919
Feb 11 16:42:18:Failed to resolve ruckuscontroller...
Feb 11 16:42:18:Resovling ruckuscontroller with retry: 917
Feb 11 15:42:17:Failed to resolve ruckuscontroller...
```

History

Release version	Command history
08.0.80	This command was introduced as **show sz log**.
08.0.92	The command name was changed to **show manager log**.

show manager sessions

Displays the Telnet and SSH sessions used by the ICX-Manager.

Syntax

show manager sessions

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show manager sessions** command displays the following information:

Output field	Description
Inbound	Connections listed under this heading are inbound.
Outbound	Connections listed under this heading are outbound.
Connection	The SSH and Telnet connection ID.
Server Hostkey	The type of server host key: DSA or RSA.
Client IP Address	The IP address of the SSH client.
Server IP Address	The IP address of the SSH server.
Idle timeout (minutes)	SSH idle timeout value in minutes.

Examples

The following example displays information about ICX-Manager sessions, including the Telnet connections, the SSH connections, and their status.

```
device# show manager sessions
Telnet server status: Enabled
Telnet connections (inbound):
 2       closed
 3       closed
 4       closed
 5       closed
 6       closed
 7       closed
 8       closed
 9       closed
 10      closed
Telnet connections (outbound):
 11      closed
 12      closed
 13      closed
 14      closed
 15      closed
SSH server status: Enabled
SSH copy-received-cos status: Disabled
SSH connections:
SSH connections (inbound):
 1       pending,     client ip address 172.26.67.239, server hostkey DSA, privilege super-user
         using vrf default-vrf.
         you are connecting to this session
         2 minute(s) 15 second(s) in idle
 2       closed
 3       closed
 4       closed
 5       closed
 6       closed
 7       closed
SSH connection (outbound):
 9       established, server ip address 127.0.0.1, from Console session, , server hostkey DSA, privilege
super-user
         using vrf default-vrf.
         40 second(s) in idle
 10      closed
 11      closed
 12      closed
 13      closed
 14      closed
 15      closed
 16      closed
 17      closed
 18      closed
 19      closed
 20      closed
```

History

Release version	Command history
08.0.90	This command was introduced as **show sz sessions**.
08.0.92	The command name was changed to **show manager sessions**.

show manager status

Displays the ICX-Manager IP address and the status of the connection with the ICX-Manager.

Syntax

show manager status

Modes

Privileged EXEC mode

Examples

The following example displays information about the connection with SmartZone:

```
device> show manager status

============    MGMT Agent State Info     ===================

Config Status:Enabled Operation Status:Enabled
State:SSH CONNECTED  Prev State:SSH CONNECTING             Event:SZ_SSH_CONNECT_EVENT

SWR List                            : None
DNS List                :
Active List             : 10.176.160.116
Active List IPV6        : 2620:107:90d0:ab40::116
DHCP Option 43          : No
DHCP Opt 43 List        : None
Backup List             : None
Backup List IPV6        : None
Merged List             : 2620:107:90d0:ab40::116 10.176.160.116

SZ IP Used              : 2620:107:90d0:ab40::116
Port List               : 987
Server Port Used        : 443
Query Status            : APPROVED

SSH Tunnel Status -:
Tunnel Status           : Established
CLI IP/Port             : 127.255.255.253/59449
SNMP IP/Port            : 127.255.255.254/8253
Syslog IP/Port          : 127.0.0.1/20514
HTTP CLIENT IP/Port     : 127.0.0.1/5080
HTTP SERVER IP/Port     : 127.255.255.252/63098
Timer Status            : Not Running
```

History

Release version	Command history
08.0.80	This command was introduced as **show sz status**.
08.0.80c	This command was modified to include the name of the switch registrar host.
08.0.92	The name of the command was changed to **show manager status**.
09.0.00	The command output was modified to include information for server ports.

show manager tcp connections

Displays TCP connections used by the ICX-Manager.

Syntax

show manager tcp connections

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show manager tcp connections** command displays the following information:

Output field	Description
Local IP address:port	The IPv4 address and port number of the local router interface over which the TCP connection occurs.
Remote IP address:port	The IPv4 address and port number of the remote router interface over which the TCP connection occurs.
TCP state	The state of the TCP connection. Possible states include the following: • LISTEN: Waiting for a connection request. • SYN-SENT: Waiting for a matching connection request after having sent a connection request. • SYN-RECEIVED: Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTABLISHED: Data can be sent and received over the connection. This is the normal operational state of the connection. • FIN-WAIT-1: Waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent. • FIN-WAIT-2: Waiting for a connection termination request from the remote TCP. • CLOSE-WAIT: Waiting for a connection termination request from the local user. • CLOSING: Waiting for a connection termination request acknowledgment from the remote TCP. • LAST-ACK: Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request). • TIME-WAIT: Waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request. • CLOSED: There is no connection state.
RcvQue	Number of packets in the receive queue.
RxBuffe	Number of receive packets buffered.
SendQue	Number of packets in the send queue.
TxBuffe	Number of transmit packets buffered.
FREE TCP	The percentage of free TCP control block (TCP) space.

Output field	Description
FREE TCP QUEUE BUFFER	The percentage of free TCP queue buffer space.
FREE TCP SEND BUFFER	The percentage of free TCP send buffer space.
FREE TCP OUT OF SEQUENCE BUFFER	The percentage of free TCP out-of sequence-buffer space.

Examples

The following example displays sample output for ICX-Manager TCP connections.

```
device# show manager tcp connections
Total 4 TCP connections
   LISTEN: 0; SYN-SENT: 0; SYN-RECEIVED 0; ESTABLISHED: 4; FIN-WAIT-1: 0
   FIN-WAIT-2: 0; CLOSE-WAIT: 0; LAST-ACK 0; CLOSING: 0; TIME-WAIT: 0
Local IP address:port <-> Remote IP address:port TCP state    RcvQue  RxBuffe SendQue TxBuffe
127.0.0.1        161       172.26.67.239    7501   ESTABLISHED  0       0       0       0
172.26.67.239    7501      127.0.0.1        161    ESTABLISHED  0       0       0       0
172.26.67.239    7620      127.0.0.1        20514  ESTABLISHED  0       0       0       0
127.0.0.1        20514     172.26.67.239    7620   ESTABLISHED  0       0       0       0

TCP MEMORY USAGE PERCENTAGE
FREE TCB = 90 percent
FREE TCP QUEUE BUFFER = 100 percent
FREE TCP SEND BUFFER = 100 percent
FREE TCP OUT OF SEQUENCE BUFFER = 100 percent
```

History

Release version	Command history
08.0.90	This command was introduced as **show sz tcp connections**.
08.0.92	The command name was changed to **show manager tcp connections**.

show management access

Displays information on access restrictions or permissions applied to management protocols.

Syntax

show management access

Modes

All modes

Usage Guidelines

NOTE
Beginning in FastIron release 09.0.00, access control lists (ACLs) can no longer be applied to management protocols. Related binding commands are deprecated. The **management access** command is used instead to control incoming traffic from specific management protocols.

The **management access** command is used to set controls on incoming traffic based on source IPv4, IPv6, or MAC address and specified protocols.

The keyword **all** indicates the command line action is applied to all management protocols that can be specified for the management access command; that is, snmp, telnet, web (http), and ssh.

Available actions are **allow** and **deny**. A **deny** action specifies that the designated traffic is dropped.

Examples

The following example shows that management access for incoming Telnet and SSH packets is allowed on two sets of IPv4 addresses and one MAC address. The same MAC address also allows incoming SNMP packets.

```
device# show management access
src-ip 10.10.10.0/255.255.255.0 src-ip 1.1.1.1/255.255.255.255 mac CC:4E:24:D0:8B:81 allow telnet ssh
mac CC:4E:24:D0:8B:81 allow snmp
```

History

Release version	Command history
09.0.00	This command was introduced.

show management-vrf

Displays management Virtual Routing and Forwarding (VRF) packet and session rejection statistics including dropped packets due to failure in management VRF validation.

Syntax

show management-vrf

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

Ensure that the management VRF is configured before executing the **show management-vrf** command.

Command Output

The **show management-vrf** command displays the following information.

Output field	Description
Management VRF name	Displays the configured management VRF name.
Management Application	Displays the management application names.
Rx Drop Pkts	Displays the number of packets dropped in the inbound traffic.
Tx Drop Pkts	Displays the number of packets dropped in the outbound traffic.
TCP Connection rejects	Displays the number of TCP connections per application rejected due to management VRF validation.

Examples

The following is sample output from the **show management-vrf** command.

```
device(config)# show management-vrf

Management VRF name : sflow
Management Application     Rx Drop Pkts     Tx Drop Pkts
SNMP Engine              0                  11
RADIUS Client              0              0
TFTP Client              0                0
Traps                      -              0
SysLogs                  -              0
TCP Connection rejects:
Telnet              : 0
SSH (Strict)     : 685
TACACS+ Client   : 0
```

show media

Displays information about the media devices installed per device, per stack, and per port.

Syntax

show media [**validation**] [**ethernet** *unit/slot/port* | **stack** *stack*]

Parameters

validation

Displays detailed information about the optics inventory and indicates if the optics are official RUCKUS optics.

ethernet *unit/slot/port*

Displays the media type for the specified Ethernet interface.

stack *stack*

Displays the media type for the specified stack.

Modes

User EXEC mode

Command Output

This command displays the Type, Vendor, Part number, Version and Serial number of the SFP, SFP+, QSPF, or QSPF+ optical device installed in the port. If none of these optical devices are installed in a port, the "Type" field will display "EMPTY".

NOTE

RUCKUS supports digital optical monitoring only on RUCKUS optics.

Examples

The following example sample output displays information about the media installed on a device.

```
device> show media

Port 1/1/1 :     Type : 1G M-C (Gig-Copper)
Port 1/1/2 :     Type : 1G M-C (Gig-Copper)
Port 1/1/3 :     Type : 1G M-C (Gig-Copper)
Port 1/1/4 :     Type : 1G M-C (Gig-Copper)
Port 1/1/5 :     Type : 1G M-C (Gig-Copper)
Port 1/1/6 :     Type : 1G M-C (Gig-Copper)
Port 1/1/7 :     Type : 1G M-C (Gig-Copper)
Port 1/1/8 :     Type : 1G M-C (Gig-Copper)
Port 1/1/9 :     Type : 1G M-C (Gig-Copper)
Port 1/1/10:     Type : 1G M-C (Gig-Copper)
Port 1/1/11:     Type : 1G M-C (Gig-Copper)
Port 1/1/12:     Type : 1G M-C (Gig-Copper)
Port 1/1/13:     Type : 1G M-C (Gig-Copper)
Port 1/1/14:     Type : 1G M-C (Gig-Copper)
Port 1/1/15:     Type : 1G M-C (Gig-Copper)
Port 1/1/16:     Type : 1G M-C (Gig-Copper)
Port 1/1/17:     Type : 1G M-C (Gig-Copper)
Port 1/1/18:     Type : 1G M-C (Gig-Copper)
Port 1/1/19:     Type : 1G M-C (Gig-Copper)
Port 1/1/20:     Type : 1G M-C (Gig-Copper)
Port 1/1/21:     Type : 1G M-C (Gig-Copper)
Port 1/1/22:     Type : 1G M-C (Gig-Copper)
Port 1/1/23:     Type : 1G M-C (Gig-Copper)
Port 1/1/24:     Type : 1G M-C (Gig-Copper)
Port 1/2/1 :     Type : 10GE SR 300m (SFP +)
Port 1/2/2 :     Type : EMPTY
Port 1/2/3 :     Type : 1G Twinax 1m (SFP)
Port 1/2/4 :     Type : 1G Twinax 1m (SFP)
```

The following example details the optics inventory and show if the optics are official RUCKUS optics.

```
device> show media validation

Port       Supported Vendor
Type
--------------------------------------------------------------------------
1/1/1      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/2      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/3      Yes       RUCKUS               Type  : 10GE USR 100m (SFP
+)
1/1/4      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/5      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/6      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/7      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/8      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/9      Yes       RUCKUS               Type  : 1G M-
GBXD(SFP)
1/1/11     Yes       RUCKUS               Type  : 1G M-
GBXU(SFP)
1/1/13     Yes       RUCKUS               Type  : 1G M-
LHA(SFP)
1/1/14     Yes       RUCKUS               Type  : 1G M-
LHA(SFP)
1/1/17     Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
1/1/19     Yes       RUCKUS               Type  : 10GE USR 100m (SFP
+)
1/1/24     Yes       RUCKUS               Type  : 1GE M-
SX(SFP)
1/1/25     Yes       RUCKUS               Type  : 1G M-
TX(SFP)
1/1/26     Yes       RUCKUS               Type  : 1G M-
TX(SFP)
1/1/27     Yes       RUCKUS               Type  : 1G M-
TX(SFP)
1/1/28     Yes       RUCKUS               Type  : 1G M-
TX(SFP)
1/1/30     Yes       RUCKUS               Type  : 1G M-
TX(SFP)
1/1/31     Yes       RUCKUS               Type  : 1G M-
GBXU(SFP)
1/1/33     Yes       RUCKUS               Type  : 1G M-
GBXD(SFP)
1/1/37     Yes       RUCKUS               Type  : 1G M-
GBXD(SFP)
1/1/39     Yes       RUCKUS               Type  : 1G M-
TX(SFP)
1/1/43     Yes       RUCKUS               Type  : 1G M-
GBXU(SFP)
1/1/47     Yes       RUCKUS               Type  : 10GE USR 100m (SFP
+)
1/1/48     No        FINISAR CORP.        Type  : 1GE M-
SX(SFP)
1/2/1      Yes       RUCKUS               Type  : 40GE-SR4 100m (QSFP
+)
1/3/1      Yes       RUCKUS               Type  : 40GE-Active Copper 1m (QSFP
+)
1/3/4      Yes       RUCKUS               Type  : 40GE-Active Copper 1m (QSFP
+)
2/1/1      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
2/1/2      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
```

```
2/1/3      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
2/1/4      Yes       RUCKUS               Type  : 10GE SR 300m ((SFP
+))
2/1/5      Yes       RUCKUS               Type  : 1G M-
TX(SFP)
2/1/6      Yes       RUCKUS               Type  : 1G M-
TX(SFP)
2/1/9      Yes       RUCKUS               Type  : 1GE M-SX(SFP)
```

The following example displays the media type for a specified stack.

```
device> show media stack 1

Port 1/1/1   :  Type  : EMPTY
Port 1/1/2   :  Type  : EMPTY
Port 1/1/3   :  Type  : EMPTY
Port 1/1/4   :  Type  : EMPTY
Port 1/1/5   :  Type  : EMPTY
Port 1/1/6   :  Type  : EMPTY
Port 1/1/7   :  Type  : EMPTY
Port 1/1/8   :  Type  : EMPTY
Port 1/1/9:1 :  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/9:2 :  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/9:3 :  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/9:4 :  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/10  :  Type  : EMPTY
Port 1/1/11:1:  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/11:2:  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/11:3:  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/11:4:  Type  : 4x10GE Active Copper 1m (QSFP+)
Port 1/1/12  :  Type  : EMPTY
Port 1/1/13  :  Type  : EMPTY
Port 1/1/14  :  Type  : EMPTY
Port 1/1/15  :  Type  : EMPTY
Port 1/1/16  :  Type  : EMPTY
Port 1/1/17  :  Type  : EMPTY
Port 1/1/18  :  Type  : EMPTY
Port 1/1/19  :  Type  : EMPTY
Port 1/1/20  :  Type  : EMPTY
Port 1/2/1   :  Type  : EMPTY
Port 1/2/2   :  Type  : EMPTY
Port 1/2/3   :  Type  : EMPTY
Port 1/2/4   :  Type  : EMPTY
Port 1/2/5   :  Type  : EMPTY
Port 1/2/6   :  Type  : EMPTY
Port 1/3/1   :  Type  : 40GE-SR4 100m (QSFP+)
Port 1/3/2   :  Type  : EMPTY
Port 1/3/3   :  Type  : EMPTY
Port 1/3/4   :  Type  : EMPTY
Port 1/3/5   :  Type  : EMPTY
Port 1/3/6   :  Type  : EMPTY
Port 17/1/2  :  Type  : 1G M-C (Gig-Copper)
Port 17/1/3  :  Type  : 1G M-C (Gig-Copper)
Port 17/1/4  :  Type  : 1G M-C (Gig-Copper)
Port 17/1/5  :  Type  : 1G M-C (Gig-Copper)
Port 17/1/6  :  Type  : 1G M-C (Gig-Copper)
Port 17/1/7  :  Type  : 1G M-C (Gig-Copper)
...
```

The following example displays the media type for the specified Ethernet interface.

```
device> show media ethernet 1/3/1

Port    1/3/1: Type  : 40GE-SR4 100m (QSFP+)
Vendor: RUCKUS             Version: A
Part# : 57-1000128-01      Serial#: LTA112251000543
```

show memory

Displays the memory usage for system tasks, transmission control protocol, and stack units.

Syntax

show memory [**mem-leak** | **shmdb** | **task** | **tcp** | **unit** *unit-id*]

Parameters

mem-leak
Displays memory leaks.

shmdb
Displays shared memory

task
Displays memory usage per system task.

tcp
Displays Transmission Control Protocol (TCP) memory usage.

unit *unit-id*
The ID of the stack unit.

Modes

User EXEC mode

Command Output

The **show memory task** command displays the following information:

Output field	Description
Task	The name of the task.
Alloc	The amount memory allocated for the task.
Free	The amount of free memory available.
Used	The amount of memory used by the specific task.
TCB usage	The availability of Transmission Control Block for the TCP connection.
TCP QUEUE BUFFER usage	The availability of the Queue buffer used to hold the TCP messages that need to be sent.
TCP SEND BUFFER usage	The availability of buffers which will be used to send the TCP packets from the device.
TCP RECEIVE BUFFER usage	The availability of buffers which will be used to receive the TCP packets to the device.
TCP OUT OF SEQUENCE BUFFER usage	The availability of re-sequence buffer used for the TCP connection.

Examples

The following example command displays the memory usage per task.

```
Task Memory Usage Info
------------------------------
Last clear : NA
----------------------------------------------------------------------
Task                          Alloc         Free          Used
----------------------------------------------------------------------
TimerTsk                        144            0           144
FlashTsk                       5552            0          5552
MainTsk                    33153780      3411177      29742603
keygen                          1468            0          1468
itc                             9188            0          9188
bcmCNTR.0                      17820            0         17820
bcmL2MOD.0                       144            0           144
scp                           232815        27166        205649
appl                       676257682    637313495      38944187
snms                          127713        52104         75609
rtm                          9476869        17272       9459597
rtm6                          321341        17272        304069
rip                           574422         8636        565786
bgp                          4048555        17272       4031283
ospf                         2937465         8636       2928829
openflow_ofm                  431242        14621        416621
openflow_opm                  433909        17272        416637
mcast_fwd                    1776859        17272       1759587
mcast                        2614790        31233       2583557
msdp                          221375        17272        204103
ripng                          96181         8636         87545
ospf6                        1989857         8636       1981221
mcast6                        794175        22597        771578
ipsec                         208381         8636        199745
dhcp6                         134907         8636        126271
snmp                           57140        17272         39868
rmon                           74775        17272         57503
web                            56915        17344         39571
acl                          1291591        28243       1263348
flexauth                      277607         8636        268971
ntp                            56835        17272         39563
rconsole                       48215         8636         39579
console                      2059410      1476779        582631
ospf_msg_task                  56035        17272         38763
auxTsk                          4572            0          4572
bcmLINK.0                      37152        37152             0
Total Memory Used: 97213162
```

The following example displays the TCP memory usage information.

```
device# show memory tcp
TCP MEMORY USAGE
TCB usage: total=73140, free=71300
TCP QUEUE BUFFER usage: total=19635, free=19635
TCP SEND BUFFER usage: total=192532, free=192532
TCP RECEIVE BUFFER usage: total=192532, free=192532
TCP OUT OF SEQUENCE BUFFER usage: total=25074, free=25074
```

The following example displays memory usage for stack unit 1.

```
device# show memory unit 1
Stack unit 1:
  Total DRAM: 268435456 bytes
  Dynamic memory: 3781353472 bytes total, 3563307008 bytes free, 5% used
```

The followind example displays information about shared memory.

```
device> show memory shmdb

Stack unit 1:
Layout     :total_bytes=4194304 meta_data_bytes=286720 data_bytes=3907584
ObjKey     :current_index=67 max_index=4000 used=1.67%
ObjContext :current_index=67 max_index=4000 used=1.67%
RegPID     :current_index=3 max_index=1024 used=0.29%
DataRegion :used_bytes=278940 free_bytes=3628644 used=7.13%
All allocation in shmdb is fine.
```

History

Release version	Command history
08.0.30	This command was introduced.
09.0.00	The **mem-leak** and **shmdb** keywords were added.

show memory mem-leak

Displays memory leak information of FastIron process and other supported processes.

Syntax

show memory mem-leak { **processes** | { **ref-cnt** | **resource** | **size** } [**process-name** *name*] }

Parameters

processes

Displays all processes supporting memory leak detection.

ref-cnt

Displays the collected memory leak information based on the reference count in the specified process.

resource

Displays the collected memory leak information based on the resource in the specified process.

size

Displays the collected memory leak information based on the size in the specified process.

process-name *name*

Specify the name of the process for which you want the memory leak details. If the process name is not specified, the FastIron process is considered by default.

Modes

Privileged EXEC mode

Examples

The following example displays all processes supporting memory leak detection.

```
device# show memory mem-leak processes
Processes supporting memory leak monitoring feature FastIron
FastIron        ITC_MSG_TYPE=0x8e0019 DEST_APP_ID=0x5a PID=1548 709
hmond           ITC_MSG_TYPE=0x890008 DEST_APP_ID=0x6e PID=593 591
poed            ITC_MSG_TYPE=0xae0100 DEST_APP_ID=0x95 PID=549
fi_syslog       ITC_MSG_TYPE=0x1b0100 DEST_APP_ID=0x55 PID=2707
cfg_sync        ITC_MSG_TYPE=0xc20008 DEST_APP_ID=0xa0 PID=2445
snmpagentd      ITC_MSG_TYPE=0x18000a DEST_APP_ID=0x16 PID= -
netconfd_svc    ITC_MSG_TYPE=0x8c0005 DEST_APP_ID=0x73 PID= -
```

The following example enables memory leak detection and displays the collected memory leak information based on the resource in FastIron process.

```
device#debug mem-leak on
Start memory leak monitoring in FastIron
Tracking is on
Will automatically turn off after 3 months
device#show memory mem-leak resource process-name FastIron
Memory leak show by resource in FastIron
From processID=888
memory tracking has run 00:00:06
malloc 1479 times, 1383624 B, free: # 1478 , 1383505 B, not in: 1
                     alloc in-use  avail get-fail    limit  get-mem  size init
mem-ptr pool          2000      1   1999        0   100000     1479    12 2000
stack pool            1000      1    999        0    10000     1399    92 1000
mem-ptr hash: size=1, anch=2003, pool: s=2003, use=1, fail=0
stack hash: size=1, anch=1003, pool: s=1003, use=1, fail=0
**** Warning! counter free not in hash = 1
```

The following example enables memory leak detection and displays the collected memory leak information based on the size in FastIron process.

```
device#show memory mem-leak size  process-name FastIron
Memory leak show by size in FastIron
From processID=888
memory tracking has run 00:00:24
malloc 5473 times, 5149409 B, free: # 5470 , 5149143 B, not in: 2
un-freed sorted by size: total 266 B, 3 malloc, 3 stack.
1 size=115, ref_cnt=1, stack: 01bb1e44 f6f923f0 f6e38b50 0051ba6c 004c4b48
    0051dcc8 f6f9ce8c f73ac5cf
2 size=78, ref_cnt=1, stack: 01bb1e44 f6f923f0 01bb2634 005810e8 00675a38
    006498fc 00688f84 0008ebd8 01b90c04 01b91e50 004c44a8 001fcd48 000a76c8
    00034e50 f6f9ce8c f73ac5cf
3 size=73, ref_cnt=1, stack: 01bb1e44 f6f923f0 01bb2650 00688cd8 006892cc
    0062a77c 00633c48 0064996c 00688f84 0008ebd8 01b90c04 01b91e50 004c44a8
    001fcd48 000a76c8 00034e50 f6f9ce8c f73ac5c
```

The following example enables memory leak detection and displays the collected memory leak information based on the resource in poed process.

```
device# debug mem-leak on process-name poed
Start memory leak monitoring in poed
Tracking is on
Will automatically turn off after 3 months
device# show memory mem-leak resource process-name poed
Memory leak show by resource in poed
From processID=1507
memory tracking has run 00:00:31
malloc 248 times, 279991 B, free: # 248 , 279991 B, not in: 0
                     alloc in-use  avail get-fail    limit  get-mem  size init
mem-ptr pool          2000      0   2000        0   100000      248    12 2000
stack pool            1000      0   1000        0    10000      248    92 1000
mem-ptr hash: size=0, anch=2003, pool: s=2003, use=0, fail=0
stack hash: size=0, anch=1003, pool: s=1003, use=0, fail=0
```

The following example enables memory leak detection and displays the collected memory leak information based on the size in poed.

```
device# debug mem-leak on process-name poed
Start memory leak monitoring in poed
Tracking is on
Will automatically turn off after 3 months
device# show memory mem-leak size process-name poed
Memory leak show by size in poed
From processID=1507
memory tracking has run 00:01:37
malloc 829 times, 934824 B, free: # 827 , 934725 B, not in: 1
un-freed sorted by size: total 99 B, 2 malloc, 2 stack.
1 size=84, ref_cnt=1, stack: b60215e8 b6021bb4 b5ef2404 b5f00de0 b5ef9f60 0003da34 0002f3cc 0003b3e8
b6030c60 b6031704 0003ec40 b5efceb0
2 size=15, ref_cnt=1, stack: b60215e8 b6021bb4 b5ef2404 00030ee0 0003b438 b6030c60 b6031704 0003ec40
b5efceb0
```

History

Release version	Command history
09.0.00	This command was introduced.

show memory task

Displays the memory usage, allocated memory, and free memory for system tasks on the device.

Syntax

show memory task [**clear**]

Parameters

clear

Clears the displayed memory information if no memory is used.

Modes

User EXEC mode

Usage Guidelines

Use this command to show memory usage, allocated memory, and free memory for system tasks. Use the **clear** option to clear the information if no memory is used.

Examples

The following example displays the memory usage, allocated memory, and free memory for system tasks on the device.

```
device# show memory task
Task Memory Usage Info
----------------------
Last clear : NA
-----------------------------------------------------------------
 Task                          Alloc         Free        Used
-----------------------------------------------------------------
TimerTsk                         144            0         144
FlashTsk                        5552            0        5552
MainTsk                     33153780      3411177    29742603
keygen                         1468            0        1468
itc                            9188            0        9188
bcmCNTR.0                     17820            0       17820
bcmL2MOD.0                      144            0         144
scp                          232815        27166      205649
appl                       676257682    637313495    38944187
snms                          127713        52104       75609
rtm                          9476869        17272     9459597
rtm6                          321341        17272      304069
rip                           574422         8636      565786
bgp                          4048555        17272     4031283
ospf                         2937465         8636     2928829
openflow_ofm                  431242        14621      416621
openflow_opm                  433909        17272      416637
mcast_fwd                    1776859        17272     1759587
mcast                        2614790        31233     2583557
msdp                          221375        17272      204103
ripng                          96181         8636       87545
ospf6                        1989857         8636     1981221
mcast6                        794175        22597      771578
ipsec                         208381         8636      199745
dhcp6                         134907         8636      126271
snmp                           57140        17272       39868
rmon                           74775        17272       57503
web                            56915        17344       39571
acl                          1291591        28243     1263348
flexauth                      277607         8636      268971
ntp                            56835        17272       39563
rconsole                       48215         8636       39579
console                      2059410      1476779      582631
ospf_msg_task                  56035        17272       38763
auxTsk                          4572            0        4572
bcmLINK.0                      37152        37152           0
Total Memory Used: 97213162
```

History

Release version	Command history
08.0.30	This command was introduced.

show metro-ring

Displays the metro ring details.

Syntax

show metro-ring *ring-id* [**diagnostics**]

Parameters

ring-id

Displays the details of the metro ring specified by the ring ID.

diagnostics

Displays the diagnostic results for the specified metro ring.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

VLAN configuration mode

VSRP VRID configuration mode

Command Output

The **show metro-ring** *ring-id* **diagnostics** command displays the following information:

Output field	Description
Ring id	The metro ring ID.
Diag state	The state of ring diagnostics.
RHP average time	The average round-trip time for an Ring Hello Packet (RHP) packet on the ring. The calculated time has a granularity of 1 microsecond.
Recommended hello time	The hello time recommended by the software based on the RHP average round-trip time.
Recommended Prefwing time	The preforwarding time recommended by the software based on the RHP average round-trip time.
Diag frame sent	The number of diagnostic RHPs sent for the test.
Diag frame lost	The number of diagnostic RHPs lost during the test.

The **show metro-ring** *ring-id* command displays the following information:

Output field	Description
Ring id	The metro ring ID.
State	The state of MRP. The state can be enabled or disabled.

Output field	Description
Ring role	Whether this node is the master for the ring. The role can be master or member.
Master vlan	The ID of the master VLAN in the topology group used by this ring. If a topology group is used by MRP, the master VLAN controls the MRP settings for all VLANs in the topology group. The topology group ID is 0 if the MRP VLAN is not the master VLAN in a topology group. Using a topology group for MRP configuration is optional.
Topo group	The topology group ID.
Hello time	The interval, in milliseconds, at which the forwarding port on the ring master node sends RHPs.
Prefwing time	The number of milliseconds an MRP interface that has entered the preforwarding state will wait before changing to the forwarding state.
Ring interfaces	The ring interfaces in the device.
Interface role	The interface role can be one of the following: • primary – Master node - The interface generates RHPs. – Member node - The interface forwards RHPs received on the other interface (the secondary interface). • secondary - The interface does not generate RHPs. – Master node - The interface listens for RHPs. – Member node - The interface receives RHPs.
Forwarding state	Whether MRP forwarding is enabled on the interface. The forwarding state can be one of the following: • blocking - The interface is blocking Layer 2 data traffic and RHPs. • disabled - The interface is down. • forwarding - The interface is forwarding Layer 2 data traffic and RHPs. • preforwarding - The interface is listening for RHPs but is blocking Layer 2 data traffic.
Active interface	The physical interfaces that are sending and receiving RHPs. If a port is disabled, its state is shown as "disabled". If an interface is part of a LAG, the member port which comes up first is listed.
Interface Type	Shows if the interface is a regular port or a tunnel port.
RHPs sent	The number of RHPs sent on the interface. **NOTE** This field applies only to the master node. On non-master nodes, this field contains 0. This is because the RHPs are forwarded in hardware on the non-master nodes.
RHPs rcvd	The number of RHPs received on the interface. **NOTE** On most devices, this field applies only to the master node. On non-master nodes, this field contains 0. This is because the RHPs are forwarded in hardware on the non-master nodes. However, on the FastIron devices, the RHP received counter on non-master MRP nodes increments. This is because, on FastIron devices, the CPU receives a copy of the RHPs forwarded in hardware.
TC RHPs rcvd	The number of Topology Change RHPs received on the interface. A Topology Change RHP indicates that the ring topology has changed.
State changes	The number of MRP interface state changes that have occurred. The state can be one of the states listed in the Forwarding state field.

Examples

The following example displays the MRP diagnostics result on the master node.

```
device# show metro-ring 1 diagnostics
Metro Ring 1 - custA
=============
diagnostics results

Ring       Diag       RHP average     Recommended     Recommended
id         state      time(microsec)  hello time(ms)  Prefwing time(ms)
1          disabled   < 0             100             300

Diag frame sent      Diag frame lost
0                    0
```

The following example displays the output of the **show metro-ring** command.

```
device# show metro-ring 1
Metro Ring 1
=============
Ring     State     Ring     Master    Topo       Hello      Prefwing
id                 role     vlan      group      time(ms)   time(ms)
2        enabled   member   2         not conf   100        300
Ring interfaces    Interface role     Forwarding state   Active interface  Interface Type
ethernet 1/1/1     primary            disabled           none              Regular
ethernet 1/1/2     secondary          forwarding         ethernet 2        Tunnel
RHPs sent          RHPs rcvd       TC RHPs rcvd       State changes
3                  0                                                0                 4
```

show mirror

Displays the port mirroring configuration details.

Syntax

show mirror ethernet *stackid/slot/port*

Parameters

ethernet *stackid/slot/port*

Displays the details for the specified Ethernet port.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example displays sample output of the **show mirror** command.

```
device(config)# show mirror ethernet 1/2/1
Mirror port 1/2/1
  Input monitoring      : (U1/M1)   2
  Output monitoring     : None
```

show module

Displays module information for stack members.

Syntax

show module

Modes

User EXEC mode

Command Output

The **show module** command displays the following information:

Output field	Description
Module	Identifies the module by stack unit ID, module number, and module type.
Status	The status of this module.
Ports	The number of ports in this module.
Starting MAC	The starting MAC address for this module.

Examples

The following is sample output for the **show module** command.

```
device# show module
       Module                                        Status Ports Starting MAC
U1:M1  ICX8200-48PF2 POE 48-port Management Module      OK     48    c0c5.207e.9cd2
U1:M2  ICX8200-4x25G 4-port 100G Module                 OK     4     c0c5.207e.9d03
ICX8200-48PF2 Router#
```

show monitor

Displays the monitored ports configurations.

Syntax

show monitor ethernet *stackid/slot/port*

Parameters

ethernet *stackid/slot/port*

Displays the information for the specified monitored Ethernet port.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example displays sample output of the **show monitor** command.

```
device> show monitor ethernet 1/1/2
  Input mirrored by     : (U1/M2)   1
  Output mirrored by    : None
```

show mstp

Displays the Multiple Spanning Tree Protocol (MSTP) information.

Syntax

show mstp { [**detail**] *mstp-id* | **configuration** }

Parameters

detail

Displays detailed MSTP information for the specified ID.

mstp-id

Displays the MSTP information for a specific ID.

configuration

Displays MSTP configuration information.

Modes

User EXEC mode

Command Output

The **show mstp** command can display the following information:

Output field	Description
MSTP Instance	The ID of the MSTP instance for which statistics are being displayed. For the CIST, this number is 0.
VLANs	The number of VLANs that are included in this instance of MSTP. For the CIST, this number will always be 1.
Bridge Identifier	The MAC address of the bridge.
Bridge MaxAge sec	Displays the configured maximum age.
Bridge Hello sec	Displays the configured Hello variable.
Bridge FwdDly sec	Displays the configured FwdDly variable.
Bridge Hop cnt	Displays the configured Max Hop count variable.
Root MaxAge sec	The maximum age configured on the root bridge.
Root Hello sec	The Hello interval configured on the root bridge.
Root FwdDly sec	The FwdDly interval configured on the root bridge.
Root Hop Cnt	The maximum hop count left from the root bridge.
Root Bridge	The bridge identifier of the root bridge.
ExtPath Cost	The configured path cost on a link connected to this port to an external MSTP region.
Regional Root Bridge	The MAC address of the root bridge for the local region.
IntPath Cost	The configured path cost on a link connected to this port within the internal MSTP region.
Designated Bridge	The MAC address of the bridge that sent the best BPDU that was received on this port.
Root Port	The port indicating the shortest path to the root; set to "Root" if this bridge is the root bridge.

Output field	Description
Port Num	The port number of the interface.
Pri Cost	The configured priority of the port. The default is 128.
PortPath Cost	The configured or auto-detected path cost for the port.
P2P Mac	Indicates if the port is configured with a point-to-point link: • T = The port is configured in a point-to-point link. • F = The port is not configured in a point-to-point link.
Edge	Indicates if the port is configured as an operational edge port: • T = Indicates that the port is defined as an edge port. • F = Indicates that the port is not defined as an edge port.
Role State	The port current spanning tree state. A port can have one of the following states: • Forwarding • Discarding • Learning • Disabled
Designated Cost	The port path cost to the root bridge.
Max Hop cnt	The maximum hop count configured for this instance.

Examples

The following example displays MSTP information for a specified MSTP instance.

```
device# show mstp 1
MSTP Instance 1 - VLANs: 2
-------------------------------------------------------------------------------
Bridge           Bridge Bridge Bridge Bridge Root   Root  Root   Root
Identifier       MaxAge Hello  FwdDly Hop    MaxAge Hello FwdDly Hop
hex              sec    sec    sec    cnt    sec    sec   sec    cnt
8000000cdb80af01 20     2      15     20     20     2     15     19
Root             ExtPath   RegionalRoot     IntPath   Designated       Root
Bridge           Cost      Bridge           Cost      Bridge           Port
hex                        hex                        hex
8000000480bb9876 2000      8000000cdb80af01 0         8000000480bb9876 3/1/1
Port    Pri PortPath  P2P Edge Role       State      Designa-  Designated
Num         Cost      Mac Port                      ted cost  bridge
3/1/1   128 2000      T   F    ROOT       FORWARDING 0         8000000480bb9876
```

The following example displays detailed MSTP information.

```
device# show mstp detail
MSTP Instance 0 (CIST) - VLANs: 1
-------------------------------------------------------------------------------
    Bridge: 800000a0c9c002a0 [Priority 32768, SysId 0, Mac 00a0c9c002a0]
  FwdDelay 15, HelloTime 2, MaxHops 20, TxHoldCount 6, ForceVersion 3
Number of topology changes: 20
Last topology change occured 6 second(s)  ago on lg40

Port 1/1/1 - Role: DESIGNATED - State: FORWARDING
  PathCost 20000, Priority 128, OperEdge F, OperPt2PtMac F, rcvdInternal F, Boundary F
  Designated   - Root 800000a0c9c002a0, RegionalRoot 800000a0c9c002a0,
                 Bridge 800000a0c9c002a0, ExtCost 0, IntCost 0
  ActiveTimers - helloWhen 2
  MachineState - PRX-DISCARD, PTX-IDLE, PPM-SENDING_RSTP, PIM-CURRENT
                 PRT-ACTIVE_PORT, PST-FORWARDING, TCM-ACTIVE
  BPDUs      - Rcvd MST 0, RST 0, Config 0, TCN 0
                 Sent MST 129, RST 0, Config 0, TCN 0
```

The following example displays MSTP configuration details.

```
device# show mstp configuration
MSTP CONFIGURATION
------------------
Name : Reg1
Revision : 1
Version : 3 (MSTP mode)
Status : Started
Instanc  VLANs
-------- --------------
0        4093
```

Release version	Command history
10.0.00	This command was modified to display more topology information details.

show mstp root-protect

Displays the MSTP root-protect information.

Syntax

show mstp root-protect

Modes

Global configuration mode

Examples

To verify whether MSTP instances are in consistent state or in Inconsistent state, enter the following command that displays the MSTP root-protect information.

```
device# show mstp root-protect
Port    MSTI     Current State
1/1/5    MSTI 1 Consistent state

1/1/5   CIST     Inconsistent state (59 seconds left on timer)
```

History

Release version	Command history
08.0.61	This command was introduced.

show mvrp

Displays Multiple VLAN Registration Protocol (MVRP) information.

Syntax

show mvrp [**attributes** { **ethernet** *unit/slot/port* | **lag** *lag-id* | **vlan** *vlan-id* } | **statistics** { **ethernet** *unit/slot/port* | **lag** *lag-id* } | **ethernet** *unit/slot/port* | **lag** *lag-id*]

Parameters

attributes

Displays MVRP attributes.

ethernet *unit/slot/port*

Displays all MVRP VLANs for the specified Ethernet port.

lag *lag-id*

Displays MVRP details for the specified LAG.

vlan *vlan-id*

Displays MVRP details for the specified VLAN ID.

statistics

Displays the MVRP event statistics and packet RX and TX counters.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example shows sample output from the **show mvrp** command.

```
device(config)# show mvrp
Total configured mvrp ports : 5
Global Status : Enabled
Dynamic VLAN Creation : Enabled
Spanning-tree type : Spanning-tree 802.1w
MVRP untagged VLAN : 20
Join-timer(in ms) : 200
Leave-timer(in ms) : 1000
Leaveall-timer(in ms) : 10000
MVRP enabled port(s) : ethe 1/1/1 to 1/1/5
MVRP active topology port(s) : ethe 1/1/1 to 1/1/3 ethe 1/1/5
```

The following example displays MVRP event statistics and packet RX and TX counters.

```
device(config)# show mvrp statistics
Port : 1/1/25
-------------------------------------------------------------------------------
Message type                    Received     Transmitted
-------------------------------------------------------------------------------
New                             0            0
Join In                         4            6
In                              0            0
Join Empty                      0            0
Empty                           0            0
Leave                           0            0
Leave-all                       0            1
Total PDUs                      2            3
-------------------------------------------------------------------------------
```

The following example displays MVRP details of a specific port.

```
device(config)# show mvrp ethernet 1/1/25
-------------------------------------------------------------------------
MVRP Status                 : Enabled
Join-timer(in ms)           : 200
Leave-timer(in ms)          : 1000
Leave-all-timer(in ms)      : 10000
P2p                         : Yes
Applicant Mode              : Normal-participant
-------------------------------------------------------------------------
Registered Vlan(s)          : 101 4000
Declared Vlan(s)            : 101 4000
Forbidden Vlan(s)           :
```

The following example displays MVRP attributes of a specific port.

```
device(config)# show mvrp attributes ethernet 1/1/25
Port : 1/1/25    State : Forwarding
-------------------------------------------------------------------------------
VLAN       Registrar            Registrar            Applicant
           State                Mgmt                 State
-------------------------------------------------------------------------------
101        IN                   FIXED                Quiet Active
4000       IN                   FIXED                Quiet Active
```

The following example displays MVRP attributes of a specific VLAN.

```
device(config)# show mvrp attributes vlan 101
-------------------------------------------------------------------------------
PORT    VLAN       Registrar            Registrar            Applicant
                   State                Mgmt                 State
-------------------------------------------------------------------------------
1/1/25  101        IN                   FIXED                Quiet Active
```

History

Release version	Command history
08.0.90	This command was introduced.
08.0.95	This command was modified to include the type of spanning tree, the MVRP untagged VLAN ID, and the MVRP active topology ports in the output.

show notification mac-movement

Displays the MAC address movement notifications.

Syntax

show notification mac-movement { **interval-history** | **threshold-rate** }

Parameters

interval-history

Displays the collected history of MAC address movement notification and how the history interval is configured.

threshold-rate

Displays the configuration of the MAC address movement threshold rate.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show notification mac-movement interval-history** command displays the following information:

Output field	Description
Interval-History Mac Movement Notification	Specifies whether the interval history data collection is enabled.
Configured Interval	The interval over which the MAC address movement statistics were collected.
Number of macs that moved in the interval	The number of MAC addresses that moved during the configured interval regardless of how many times each address moved.
Total number of moves in the interval	The total number of MAC address moves over the configured interval.
Interval Move-Count	The number of times the MAC address has moved within the interval.

The **show notification mac-movement threshold-rate** command displays the following information:

Output field	Description
Threshold-Rate Mac Movement Notification	Specifies whether the MAC movement notification threshold rate is enabled.
Configured Threshold-Rate	The rate in MAC address moves per sampling interval after which a notification is issued. The range is from 1 through 50000.
Configured Sampling-Interval	The sampling interval in seconds over which the number of MAC address moves is measured. The range is from 1 through 86400, which is the number of seconds in a day.
Number of entries in the notification table	One entry for each time a MAC address notification threshold was reached.
MAC-Address	The MAC address that has moved to a different port.
from-Port	The port from which the MAC address moved.

Output field	Description
to-Port	The port to which the MAC address moved.
Last Move-Time	The time the last move occurred. The system uptime is used if there is no time server configured.
Vlan-id	The VLAN for the port where the MAC address movement was detected.

Examples

The following example displays the notification interval history.

```
device# show notification mac-movement interval-history
Interval-History Mac Movement Notification is ENABLED
Configured Interval : 30 seconds
Number of macs that moved in the interval : 100
Total number of moves in the interval : 98654
MAC-Address       from-Port   to-Port   Interval Move-Count   Last Move-Time   Vlan-id
--------------    ---------   -------   -------------------   --------------   -------

0000.0000.0052    1/7/1      1/7/2        1000                 May 15 01:13:20   10
0000.0000.0051    1/7/1      1/7/2        1002                 May 15 01:13:20   10
0000.0000.0050    1/7/1      1/7/2        1012                 May 15 01:13:20   10
0000.0000.004f    1/7/1      1/7/2        1018                 May 15 01:13:20   10
0000.0000.004e    1/7/1      1/7/2        1012                 May 15 01:13:20   10
(output truncated)
```

The following examples displays the notification for a threshold rate.

```
device# show notification mac-movement threshold-rate
Threshold-Rate Mac Movement Notification is ENABLED
Configured Threshold-Rate : 5 moves
Configured Sampling-Interval : 30 seconds
Number of entries in the notification table : 100
MAC-Address       from-Port    to-Port    Last Move-Time   Vlan-id
--------------    ---------    -------    --------------   -------
0000.0000.0022    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.0021    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.0020    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.001f    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.0024    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.001e    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.0023    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.001d    1/7/1        1/7/2        Apr 29 18:29:35  10
0000.0000.001c    1/7/1        1/7/2        Apr 29 18:29:35 10
(output truncated)
```

show notification-mac

Displays whether MAC-notification for SNMP traps is enabled or disabled.

Syntax

show notification-mac

Modes

User EXEC mode

Usage Guidelines

You can view statistics such as the configured interval, the number of traps sent, and the number of events sent.

Examples

The following example displays the MAC-notification statistics.

```
device# show notification-mac
Mac-notification SNMP trap is ENABLED
Configured Interval: 40 seconds
Number of trap messages sent: 2
Number of mac-notification events sent: 20
```

History

Release version	Command history
08.0.10	This command was introduced.

show ntp associations

Displays association information for all NTP servers and peers.

Syntax

show ntp associations [**detail** [*ipv4-address* | *ipv6-address*]]

Parameters

detail

Displays the detailed NTP server and peer association information for the specifies address.

ipv4-address

Displays the NTP server and peer association information for a specific IPv4 address.

ipv6-address

Displays the NTP server and peer association information for a specific IPv6 address.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

NTP configuration mode

Interface configuration mode

Command Output

The **show ntp associations** command displays the following information.

Output Field	Description
*	The peer has been declared the system peer and lends its variables to the system variables.
#	This peer is a survivor in the selection algorithm.
+	This peer is a candidate in the combine algorithm.
-	This peer is discarded as an outlier in the clustering algorithm.
x	This peer is discarded as a "falseticker" in the selection algorithm.
~	The server or peer is statically configured.
address	IPv4 or IPv6 address of the peer.
ref clock	IPv4 address or first 32 bits of the MD5 hash of the IPv6 address of the peer to which the clock is synchronized.
st	Stratum setting for the peer.
when	Time, in seconds, since the last NTP packet was received from the peer.
poll	Polling interval (seconds).
reach	Peer reachability (bit string, in octal).
delay	Round-trip delay to the peer, in milliseconds.

Output Field	Description
offset	Relative time difference between a peer clock and a local clock, in milliseconds.
disp	Dispersion.

The **show ntp associations detail** command displays the following information.

Output field	Description
server	Indicates that the server is statically configured.
symmetric active peer	Indicates that the peer is statically configured.
symmetric passive peer	Indicates that the peer is dynamically configured.
sys_peer	This peer is the system peer.
candidate	This peer is chosen as a candidate in the combine algorithm.
reject	This peer is rejected by the selection algorithm.
falsetick	This peer is dropped as a falseticker by the selection algorithm.
outlier	This peer is dropped as an outlyer by the clustering algorithm.
stratum	The stratum number.
ref ID	The IPv4 address or hash of the IPv6 address of the upstream time server to which the peer is synchronized.
time	The last time stamp that the peer received from its master.
our mode	This system's mode relative to the peer (active/passive/client/server/bdcast/bdcast client).
peer mode	Mode of the peer relative to this system.
our poll intvl	This system's poll interval to this peer.
peer poll intvl	Poll interval of the peer to this system.
root delay	The delay along the path to root (the final stratum 1 time source).
root disp	Dispersion of the path to root.
reach	The peer reachability (bit string in octal).
delay	Round-trip delay to the peer.
offset	Offset of the peer clock relative to this clock.
dispersion	Dispersion of the peer clock.
precision	Precision of the peer clock.
version	NTP version number of the peer.
org time	The originate time stamp of the last packet.
rcv time	The receive time stamp of the last packet.
xmt time	The transmit time stamp of the last packet.
filter delay	The round-trip delay, in milliseconds, of the last 8 samples.
filter offset	The clock offset, in milliseconds, of the last eight samples.
filter error	Approximate error of the last eight samples.

Examples

The following is sample output from the **show ntp associations** command.

```
device# show ntp associations

address           ref               clock    st    when    poll    reach    delay    offset     disp
172.19.69.1     172.24.114.33     3         25    64         3         2.89     0.234     39377
2001:235::234
INIT 16 - 64 0 0.00 0.000 15937
* synced, # selected, + candidate, - outlayer, x falseticker, ~ configured
```

The following is sample output from the **show ntp associations detail** command.

```
device# show ntp associations detail 1o.99.40.1

10.99.40.1 configured server, candidate, stratum 3
ref ID 10.45.57.38, time d288de7d.690ca5c7 (10:33:33.1762436551 Pacific Tue Dec 06 2011)
our mode client, peer mode server, our poll intvl 10, peer poll intvl 10,
root delay 0.02618408 msec, root disp 0.10108947, reach 3, root dist 0.23610585
delay 0.92163588 msec, offset 60.77749188 msec, dispersion 70.33842156,
precision 2**-16, version 4
org time        d288defa.b260a71f (10:35:38.2992678687 Pacific Tue Dec 06 2011)
rcv time         d288defa.a2efbd41 (10:35:38.2733620545 Pacific Tue Dec 06 2011)
xmt time         d288defa.a2ae54f8 (10:35:38.2729334008 Pacific Tue Dec 06 2011)
filter delay     0.000 6.7770 6.7773 6.7711 6.7720 6.7736 6.7700 0.9921
filter offset     0.000 19.0047 19.1145 19.2245 19.3313 17.4410 15.4463 60.7777
filter disp     16000.000 16.0005 15.9975 15.9945 15.9915 15.8885 15.8855 0.0030
filter epoch     55683 55683 55685 55687 55689 55691 55693 56748
```

show ntp status

Displays the Network Time Protocol (NTP) status.

Syntax

show ntp status

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface management configuration mode

NTP configuration mode

Command Output

The **show ntp status** command displays the following information.

Output field	Description
synchronized	Indicates that the system clock is synchronized to the NTP server or peer.
stratum	Indicates that the stratum number that this system is operating. Range is from 2 to 15.
reference clock	The IPv4 address or the first 32 bits of the MD5 hash of the IPv6 address of the peer to which the clock is synchronized.
precision	Precision of the clock of this system, in Hz.
reference time	Reference time stamp.
clock offset	Offset of clock (in milliseconds) to synchronized peer.
root delay	Total delay (in milliseconds) along the path to the root clock.
root dispersion	Dispersion of the root path, in milliseconds.
peer dispersion	Dispersion of the root path, in milliseconds.
system poll interval	Poll interval of the local system.
last clock update	Elapsed time since the router last updated its NTP information.
server mode	Status of the NTP server mode for this device.
client mode	Status of the NTP client mode for this device.
NTP master mode	Status of the master mode.
NTP master stratum	The stratum number that will be used by this device when the master is enabled and no upstream time servers are accessible.
panic mode	The status of the panic mode.

Examples

The following is sample output from the **show ntp status** command.

```
device# show ntp status

Clock is synchronized, stratum 4, reference clock is 10.20.99.174
precision is 2**-16
reference time is D281713A.80000000 (03:21:29.3653007907 GMT+00 Thu Dec 01 2011)
msec, root delay is 24.6646 msec
root dispersion is 130.3376 msec, peer dispersion is 84.3335 msec
system poll interval is 64, last clock update was 26 sec ago
NTP server mode is enabled, NTP client mode is enabled
NTP master mode is disabled, NTP master stratum is 8
NTP is not in panic mode
```

show openflow

Displays the configured OpenFlow parameters.

Syntax

show openflow

Modes

User EXEC mode

Command Output

The **show openflow** command displays the following information:

Output field	Description
Administrative Status	Enable or disable status
Controller Type	OpenFlow 1.0 or OpenFlow 1.3 controller
Controller	Number of controllers

Examples

The following example displays the results of the **show openflow** command.

```
device#show openflow

Administrative Status:       Enabled
Controller Type:             OFV 130
Number of Controllers: 4

Controller 1:
Connection Mode:             passive, TCP
Listening Address:           0.0.0.0
Connection Port:             6633
Connection Status:           TCP_LISTENING
Role:                           Equal
Asynchronous Configuration:  Packet-in (no-match|action|invalid-ttl)
                             Port-status (add|delete|modify)
                             Flow-removed (idle-timeout|hard-timeout|delete|grp-delete)

Controller 2:
Connection Mode:             active, TCP
Controller Address:          10.25.128.243
Connection Port:             2001
Connection Status:           OPENFLOW_ESABLISHED
Role:                           Master
Asynchronous Configuration:  Packet-in (no-match|action|invalid-ttl)
                             Port-status (add|delete|modify)
                             Flow-removed (idle-timeout|hard-timeout|delete|grp-delete)
Controller 3:
Connection Mode:             active, TCP
Controller Address:          10.25.128.242
Connection Port:             6633
Connection Status:           OPENFLOW_ESABLISHED
Role:                           Slave
Asynchronous Configuration:  Port-status (add|delete|modify)

Controller 4:
Connection Mode:             active, TCP
Controller Address:          10.25.128.250
Connection Port:             2002
Connection Status:           OPENFLOW_ESABLISHED
Role:                           Slave
Asynchronous Configuration:  Port-status (add|delete|modify)

Match Capability:
Port, Destination MAC, Vlan, Vlan PCP
Openflow Enabled Ports:      1/1/1 1/1/2
```

History

Release version	Command history
08.0.20	This command was introduced.

show openflow datapath-id

Displays the data path ID assigned to the device.

Syntax

show openflow datapath-id

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example displays openflow flow table entries limit in the flow table.

```
device# configure terminal
device(config)# show openflow datapath-id
datapath-id# 0000001bedb3d0c0
```

History

Release	Command History
08.0.30	This command was introduced.

show openflow controller

Displays the controller information in a flow.

Syntax

show openflow controller

Modes

User EXEC mode

Command Output

The **show openflow controller** command displays the following information:

Output field	Description
Mode	Gives the active and passive connection of the controller.
IP address	IP address of the port
Port	Port number
Status	After the connection and OpenFlow handshake, the controller gives the role of OpenFlow channel.
Role	Equal, Master and Slave role for the controller.

Examples

The following example displays the results of the **show openflow controller** command.

```
device# show openflow controller
-------------------------------------------------------------------------
Contlr Mode  TCP/SSL IP-address     Port       Status            Role
-------------------------------------------------------------------------
1   (Equal)    passive  TCP    0.0.0.0          6633   TCP_LISTENING
2   (Master)   active   TCP    10.25.128.179    6633   OPENFLOW_ESABLISHED
3   (Slave)    active   TCP    10.25.128.177    6633   OPENFLOW_ESABLISHED
3   (Equal)    active   TCP    10.25.128.165    6633   OPENFLOW_ESABLISHED
```

History

Release version	Command history
08.0.20	This command was introduced.

show openflow flows

Displays the flows information on the OpenFlow ports.

Syntax

show openflow flows

Modes

User EXEC mode

Command Output

The **show openflow flows** command displays the following information:

Output field	Description
Flow	Number of flows
Packet	Total Number of data packets trapped to be sent to controller
Byte	Total Number of data bytes trapped to be sent to controller

Examples

The following example displays the output for flows.

```
device# show openflow flows

Total Number of data packets sent to controller:                    0
Total Number of data bytes sent to controller  :                    0
Total Number of data packets from controller   :                    0
Total Number of data bytes from controller     :                    0

Total Number of Flows: 1
        Total Number of Port based Flows: 1
        Total Number of L2 Generic Flows: 0
        Total Number of L3 Generic Flows: 0
        Total Number of L2+L3 Generic Flows: 0
        Total Number of L23 Generic Flows: 0

Total Number of Hardware entries for flows: 1
        Total Number of Hardware entries for Port flow: 1
        Total Number of Hardware entries for Generic flow: 0

Total Number of Openflow interfaces: 6
        Total Number of L2  interfaces: 2
        Total Number of L3  interfaces: 4
        Total Number of L23 interfaces: 0

Flow ID: 2 Priority: 32768 Status: Active
        Rule:
           In Port:      e1/1/1
           Ether type:   0x800
           Destination IP:       19.0.0.19      Subnet IP:       255.255.255.255
        Instructions: Apply-Actions
                Action: FORWARD
                        Out Group:  11
        Statistics:
           Total Pkts: 0
           Total Bytes: 0
Idle and Hard timeouts:
                Received Flow idle timeout = 0
                Received Flow hard timeout = 0
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.50	This command was modified for out group and timeouts.

show openflow groups

For a group or a range of groups, displays the maximum number of actions in a bucket, the maximum number of buckets in a group, and the maximum number of groups.

Syntax

show openflow groups [*group-id*]

show openflow groups *group-id* **to** *group-id*

Parameters

groups *group-id*

Displays details of an OpenFlow group or range of groups.

to

Indicates a range of groups.

Modes

User EXEC mode

Command Output

The **show openflow groups** command displays the following information:

Output field	Description
Group	Maximum number of groups in a flow
Bucket	Number of buckets per group
Action	Number of actions per bucket

Examples

The following example displays the output from the **show openflow groups** command.

```
device#show openflow groups

Max number of groups             : 512
Max number of buckets per group  :  64
Max number of actions per bucket :   6

Max number of SELECT groups          : 512
Max number of buckets in SELECT group: 32
Starting Trunk ID for SELECT groups  : 49664
Group id 11

  Transaction id        410
  Type                  SELECT
  Packet Count          0
  Byte   Count          0
  Flow   Count          1
  Number of buckets     2
bucket #1
    Weight             1
    Number of actions   5
      action 1: out port: 1/1/2
      action 2: Dec IP TTL
      action 3: VLAN: 1111
      action 4: Source MAC: 0011.1111.1111
      action 5: Destination MAC: 0022.2222.2222


  bucket #2
    Weight             1
    Number of actions   5
      action 1: out port: 1/1/17
      action 2: Dec IP TTL
      action 3: VLAN: 1122
      action 4: Source MAC: 0033.3333.3333
      action 5: Destination MAC: 0044.4444.4444

  Forwarding information:
    Select Index: 49664


----

Total no. of entries printed: 1
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.50	This command was modified to show action list.

show openflow interface

Displays the information about the interfaces in a OpenFlow flow.

Syntax

show openflow interface

Modes

User configuration mode

Usage Guidelines

The **show openflow interface** command displays the physical port, up and down links, tag status, MAC addresses, and the modes.

Command Output

The **show openflow interface** command displays the following information:

Output field	Description
Port	Port Number
Link	Link status
Speed	Configured speed
Tag	Tag status
Mac Address	MAC address of the port
Mode	Gives the information about the layers

Examples

The following example displays information for all OpenFlow interfaces.

```
device# openflow enable layer3 hybrid
device# show openflow interface

Total number of Openflow interfaces: 5

Port  Link     Speed Tag MAC            OF-portid Name    Mode
1/1/1   Up       1G    Yes 000c.dbf5.bd00 1               Layer2
1/1/2   Up       1G    Yes 000c.dbf5.bd01 2               Layer2
1/1/3   Up       1G    Yes 000c.dbf5.bd01 3               Hybrid-Layer3
1/1/4   Up       1G    Yes 000c.dbf5.bd01 4               Hybrid-Layer3
1/1/5   Up       1G    Yes 000c.dbf5.bd01 5               Hybrid-Layer3
```

The following command displays information for a particular interface on a specific slot and port.

```
device# show interface ethernet 1/1/6

GigabitEthernet1/1/6 is up, line protocol is up
  Port up for 51 minutes 53 seconds
  Hardware is GigabitEthernet, address is 748e.f8e7.d901 (bia 748e.f8e7.d901)
  Configured speed auto, actual 1Gbit, configured duplex fdx, actual fdx
  Configured mdi mode AUTO, actual MDI
  Member of L2 VLAN ID 100, port is untagged, port state is FORWARDING
  BPDU guard is Disabled, ROOT protect is Disabled, Designated protect is Disabled
  Link Error Dampening is Disabled
  STP configured to ON, priority is level0, mac-learning is enabled
  OpenFlow enabled, Openflow Index 1, Flow Type Layer2
  Flow Control is config enabled, oper enabled, negotiation disabled
  Mirror disabled, Monitor disabled
  Not member of any active trunks
  Not member of any configured trunks
  No port name
  Inter-Packet Gap (IPG) is 96 bit times
  MTU 1500 bytes, encapsulation ethernet
  300 second input rate: 3904 bits/sec, 7 packets/sec, 0.00% utilization
  300 second output rate: 0 bits/sec, 0 packets/sec, 0.00% utilization
  23153 packets input, 1530094 bytes, 0 no buffer
  Received 1721 broadcasts, 21432 multicasts, 0 unicasts
  0 input errors, 0 CRC, 0 frame, 0 ignored
  0 runts, 0 giants
  0 packets output, 0 bytes, 0 underruns
  Transmitted 0 broadcasts, 0 multicasts, 0 unicasts
  0 output errors, 0 collisions
  Relay Agent Information option: Disabled

Egress queues:
Queue counters    Queued packets    Dropped Packets
    0                   0                 0
    1                   0                 0
    2                   0                 0
    3                   0                 0
    4                   0                 0
    5                   0                 0
    6                   0                 0
    7                   0                 0
```

History

Release version	Command history
08.0.20	This command was introduced.

show openflow meters

Displays all the meters in a OpenFlow flow.

Syntax

show openflow meters [*meter-id*]

Parameters

meters *meter-id*

Shows details of a specific OpenFlow meter.

Modes

User EXEC mode

Command Output

The **show openflow meters** command displays the following information:

Output field	Description
Meter-id	Meter number
Band	Number of bands in a meter
Band type	Band type (supported type: Drop, DSCP_REMARK)
Rate	Rate of the band
Counter	Band specific counter

Examples

The following example displays output with single meter band.

```
device(config)# show openflow meters 1
Meter id: 1

  Transaction id:        1437
  Meter Flags:            KBPS BURST STATS
  Flow Count:            0
  Number of  bands:      1
  In packet count:       -NA-
  In byte count:         0

  Band Type:    DROP

    Rate:                        750000
    Burst size:                  1500          kb
    In packet band count:        -NA-
    In byte band count:          0
```

The following example displays output with two meter bands.

```
device(config)# show openflow meters 2
Meter id: 2

  Transaction id:        1438
  Meter Flags:            KBPS BURST STATS
  Flow Count:            0
  Number of  bands:      2
  In packet count:       -NA-
  In byte count:         0

  Band Type:    DSCP-REMARK

    Rate:                         750000
    Burst size:                   1500          kb
    Prec level:                   1
    In packet band count:         -NA-
    In byte band count:           0


  Band Type:    DROP

    Rate:                         1000000
    Burst size:                   2000          kb
    In packet band count:         -NA-
    In byte band count:           0
```

History

Release version	Command history
08.0.20	This command was introduced.

show optic

Displays the fiber-optic temperature and power information for qualified QSFP+, SFP, or SFP+ transceivers installed in a device.

Syntax

show optic[**thresholds**]*unit/slot/port*

Parameters

thresholds

Displays the thresholds for a qualified optical transceiver for the specified port.

unit/slot/port

Displays optics information for the QSFP+, SFP, or SFP+ transceiver in the specified interface.

Modes

User EXEC mode

Usage Guidelines

This command takes advantage of information stored and supplied by the manufacturer of the QSFP+, SFP, or SFP+ transceiver. This information is an optional feature of the Multi-Source Agreement standard defining the optical interface. Not all component suppliers have implemented this feature set. When the QSFP+, SFP, or SFP+ transceiver does not supply the information, a "Not Available" message is displayed for the specific port on which the module is installed.

DOM cannot be enabled for user disabled ports. When DOM is configured globally but a port is disabled by the user, the following appears in the output: "Optical monitoring is in progress, please try later".

Command Output

The **show optic** command displays the following information:

Output field	Description
Temperature	The operating temperature, in degrees Celsius, of the optical transceiver, followed by the alarm status.
Tx Power	The transmit power signal, in decibels (dB), of the measured power referenced to one milliwatt (mW), followed by the alarm status.
Rx Power	The receive power signal, in decibels (dB), of the measured power referenced to one milliwatt (mW), followed by the alarm status.
Tx Bias Current	The transmit bias power signal, in milliamperes (mA), followed by the alarm status.
Voltage	The current voltage.

For Temperature, Tx Power, Rx Power, and Tx Bias Current in the **show optic** command output, values are displayed along with one of the following alarm status values: Low-Alarm, Low-Warn, Normal, High-Warn, or High-Alarm. The thresholds that determine these status values are set by the manufacturer of the optical transceivers. The following table describes each of these alarm status values.

TABLE 18 Alarm Status Values

Status value	Description
Low-Alarm	The monitored level has dropped below the "low-alarm" threshold set by the manufacturer of the optical transceiver.
Low-Warn	The monitored level has dropped below the "low-warn" threshold set by the manufacturer of the optical transceiver.
Normal	The monitored level is within the "normal" range set by the manufacturer of the optical transceiver.
High-Warn	The monitored level has climbed above the "high-warn" threshold set by the manufacturer of the optical transceiver.
High-Alarm	The monitored level has climbed above the "high-alarm" threshold set by the manufacturer of the optical transceiver.

Examples

The following example displays optics information for the specified interface if you are displaying for a port equipped with SFP or SFP+ transceivers.

```
device> show optic 2/1/1

 Port    Temperature     Tx Power      Rx Power       Tx Bias Current
+-----+-------------+-------------+--------------+---------------------+
2/1/1   32.2578 C     -002.5157 dBm  -002.8091 dBm    5.966 mA
        Normal        Normal         Normal           Normal
```

The following example displays optics information for a specified interface if you are displaying for a port equipped with QSFP+ transceivers, where there are 4 TX bias and 4 RX channels or lanes.

```
device> show optic 1/2/6

                        40GBASE_SR4
                       ===============
 Port  Temperature    Tx Power       Rx Power        Tx Bias Current
1/2/6  37.4531 C      005.1838 dBm  -002.1752 dBm    7.154 mA
       Normal         Normal         Normal          Normal

 Chan  Rx Power #1     Rx Power #2     Rx Power #3     Rx Power #4
+-----+--------------+---------------+---------------+----------------+
       -002.1752 dBm   -003.1704 dBm   -001.4466 dBm   -001.6241 dBm
        Normal          Normal          Normal          Normal

 Chan  Tx Bias #1    Tx Bias #2     Tx Bias #3     Tx Bias #4
+----+-----------+--------------+--------------+---------------+
       7.154 mA      6.962 mA       6.972 mA       7.014 mA
       Normal        Normal         Normal         Normal
```

The following example displays the thresholds for the qualified optical transceiver for the specified port.

```
device> show optic thresholds 2/1/1

Port 2/1/1 sfp monitor thresholds:
Temperature High alarm             5a00     90.0000 C
Temperature Low alarm              fb00     -5.0000 C
Temperature High warning           5500     85.0000 C
Temperature Low warning            0000      0.0000 C
TX Bias High alarm                 1482     10.500  mA
TX Bias Low alarm                  04e2      2.500  mA
TX Bias High warning               1482     10.500  mA
TX Bias Low warning                04e2      2.500  mA
TX Power High alarm                4e20    003.0102 dBm
TX Power Low alarm                 04ec   -008.9962 dBm
TX Power High warning              1edc   -001.0237 dBm
TX Power Low warning               0c62   -004.9894 dBm
RX Power High alarm                4e20    003.0102 dBm
RX Power Low alarm                 013b   -015.0168 dBm
RX Power High warning              1edc   -001.0237 dBm
RX Power Low warning               013b   -015.0168 dBm
```

The following example displays the thresholds for the qualified optical transceiver for the specified port.

```
ICX 7850> show optic 1/2/1
40GBASE_SR4
===============
Port Temperature Voltage Rx Power Tx Bias Current
+----+-----------+--------------+--------------+---------------+
1/2/1 38.4609 C 005.2011 dBm -002.3822 dBm 7.116 mA
Normal Normal Normal Normal
Chan Rx Power #1 Rx Power #2 Rx Power #3 Rx Power #4
+----+-----------+--------------+--------------+---------------+
-002.3822 dBm -003.0909 dBm -002.1232 dBm -003.3329 dBm
Normal Normal Normal Normal
Chan Tx Bias #1 Tx Bias #2 Tx Bias #3 Tx Bias #4
+----+-----------+--------------+--------------+---------------+
7.116 mA 7.010 mA 6.900 mA 7.022 mA
Normal Normal Normal Normal
Port Temperature Tx Power Rx Power Tx Bias Current
+--------+-----------------+-------------------+-----------------------+-------------------------+
4/1 30.8242 C xxx.xxx dBm xxx.xxx dBm xx.xxxmA
Normal Normal Normal Normal
```

The following example displays optics information for a specified interface for an ICX 7850 device.

```
device> show optic thresholds 1/3/1

Port 1/3/1 sfp monitor thresholds:
Temperature High alarm                          5d00             93.0000 C
Temperature Low alarm                              f300         -13.0000 C
Temperature High warning                5800             88.0000 C
Temperature Low warning                    f800             -8.0000 C
Supply Voltage High alarm             9088                 3.7000 Volts
Supply Voltage Low alarm                 7148                 2.9000 Volts
Supply Voltage High warning     8ca0                 3.6000 Volts
Supply Voltage Low warning         7530                 3.0000 Volts
TX Bias High alarm                                      170c             11.0800 mA
TX Bias Low alarm                                          07d0                 4.0000 mA
TX Bias High warning                                    1518             10.0800 mA
TX Bias Low warning                                        09c4                 5.0000 mA
TX Power High alarm                                        207e     -000.7998 dBm
TX Power Low alarm                                            09d0     -005.9998 dBm
TX Power High warning                                   19cf     -001.7999 dBm
TX Power Low warning                                       0c5a     -005.0003 dBm
RX Power High alarm                                        2710         000.0000 dBm
RX Power Low alarm                                            0064     -020.0000 dBm
RX Power High warning                                   1f07     -001.0001 dBm
RX Power Low warning                                       009e     -018.0134 dBm
```

History

Release version	Command history
08.0.20	This command was introduced.

show optic-timer

Displays the digital optical monitoring (DOM) time interval setting.

Syntax

show optic-timer [*unit/slot/port*]

Parameters

unit/slot/port

Specifies an Ethernet interface.

Modes

User EXEC mode

Examples

The following example displays the DOM time interval setting.

```
device> show optic-timer

Optical monitoring timer interval is 8 mins
```

History

Release version	Command history
08.0.40	This command was introduced.

show overlay-gateway

Displays information for all overlay gateways, a specific gateway, a VLAN, VXLAN Network Identifier (VNI), or remote site.

Syntax

show overlay-gateway [*gateway-name*]

show overlay-gateway *gateway-name* **detail**

show overlay-gateway *gateway-name* **site** *site-name* [**network-counters**]

show overlay-gateway *gateway-name* **site all**

show overlay-gateway *gateway-name* **vlan** *vlan-id* **to** *vlan-id*

show overlay-gateway *gateway-name* **vnid** *vxlan-network-identifier* [**counters** | **ethernet** *unit/slot/port* **access-counters** | **lag** *lag-id* **access-counters**]

Parameters

gateway-name
Specifies the VXLAN gateway name for which information is displayed.

detail
Displays more extensive information for the overlay gateway or gateways.

site *site-name*
Displays information for the remote site specified.

network-counters
Specifies network counters accosicated with the site.

all
Displays information for all sites (VXLAN tunnels) configured for the gateway.

vlan *vlan-id*
Displays information for the designated extended VLAN.

to *vlan-id*
Displays information for a specified range of VLANs.

vnid *vxlan-network-identifier*
Displays information for the designated VXLAN Network Identifier (VNI).

counters
Specifies Virtual Forwarding Instance (VFI) counters associated with this site.

ethernet *unit/slot/port*
Specifies an Ethernet interface.

access-counters
Specifies access counters associated with the site.

lag *lag-id*
Specifies a link aggregation group (LAG) interface.

Modes

User EXEC mode

Command Output

The **show overlay-gateway** command set displays the following information:

Output field	Description
Overlay Gateway Name	Name configured for the overlay gateway
Type	Type of gateway (Layer 2 extension)
Source IP interface	Loopback interface number, VRF used, and local IPv4 address of the source VEP
Total Mapped Vlans	Number of VLANs mapped to the VNI associated with the overlay gateway name
Total Sites	Number of tunnels associated with the overlay gateway
Total Overlay Gateways	Number of overlay gateways configured in the network
VLAN-ID	VLAN number for a VLAN extended over the overlay gateway
VN-ID	VXLAN Network Identifier associated with the VLAN
VFI	Layer 2 VPN identifier in the hardware (should match the VLAN ID)
Access-Port	Total number of local ports belonging to the mapped VLAN
Extended-Site	Number of remote sites to which the mapped VLAN is extended
SiteName	Name of the remote site
IP-Address	IP address of the remote site
Status	Status of the remote site (Up or Down)
Ext-Vlans	Mapped VLANs that are extended to the remote site

Examples

The following example shows sample output for the **show overlay-gateway** command. Only the overlay gateway sanjose is configured.

```
device# show overlay-gateway

Overlay Gateway Name    : sanjose
Type                    : layer2-extension
Source IP Interface     : loopback 1 (vrf: default-vrf, IP address: 7.7.7.7)
Total Mapped Vlans      : 2
Total Sites             : 1

Total 1 Overlay Gateways
```

The following example displays information for overlay gateway sanjose VLAN 101 and VLAN 102.

```
device# show overlay-gateway sanjose vlan 101
Overlay Gateway Name    : sanjose
#    VLAN-ID    VN-ID    VFI     Access-Port Extended-Site
-    -------    -----    ---     ----------- -------------
1    101        25838    101     5           1

device# show overlay-gateway sanjose vlan 102
Overlay Gateway Name    : sanjose
#    VLAN-ID    VN-ID    VFI     Access-Port Extended-Site
-    -------    -----    ---     ----------- -------------
1    102        67924    102     3           1
```

The following example displays information for two VNIs on the same overlay gateway.

```
device# show overlay-gateway sanjose vni 25838
Overlay Gateway Name    : sanjose
#    VN-ID      VLAN-ID  VFI     Access-Port Extended-Site
-    -----      -------  ---     ----------- -------------
1    25838      101      101     5           1

device# show overlay-gateway sanjose vni 67924
Overlay Gateway Name    : sanjose
#    VN-ID      VLAN-ID  VFI     Access-Port Extended-Site
-    -----      -------  ---     ----------- -------------
1    67924      102      102     3           1
```

The following example displays the counters for a VNI associated with the VXLAN tunnel

```
device# show overlay-gateway 1 vnid 30000 counters

------ The VNI Counter Stats ------
     InUcastPkts: 30                         InUcastBytes: 4590
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 38                   OutKnownUcastBytes: 4590
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

The following example displays the access counters for an Ethernet port associated with the VLAN mapped in the VXLAN tunnel.

```
device# show overlay-gateway 1 vnid 30000 ethernet 2/1/17 access-counters

------ The Access Counter Stats ------
     InUcastPkts: 15                         InUcastBytes: 1920
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 23                   OutKnownUcastBytes: 1920
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

The following example displays the access counters for a LAG interface associated with the VLAN mapped in the VXLAN tunnel.

```
device# show overlay-gateway 1 vnid 30000 lag 2 access-counters

------ The Access Counter Stats ------
     InUcastPkts: 15                         InUcastBytes: 1920
     InMcastPkts: 0                          InMcastBytes: 0
     InBcastPkts: 0                          InBcastBytes: 0

     OutKnownUcastPkts: 30                   OutKnownUcastBytes: 3840
     OutBumPkts       : 0                    OutBumBytes       : 0

Bum Traffic consists Unknown Ucast, Mcast, Bcast Traffic
```

History

Release version	Command history
08.0.70	The command was introduced.
09.0.10b	The command output was modified so that information can be displayed for all sites and for a range of VLANs. Information can be displayed for network counters associated with a site. Information can be displayed for counters and access counters.

show packet-inerror-detect

Displays details related to the monitoring for inError packets for configured ports.

Syntax

show packet-inerror-detect

Modes

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

Use this show command to view details related to the monitoring of inError packets for configured ports.

Command Output

The **show packet-inerror-detect** command displays the following information:

Output field	Description
Sampling interval	Displays the configured sampling interval.
Port	Identifies a port.
Packet inError count	The number of inError packets received in the sampling interval for the specific port.
State	Displays the status for the specific port.

Examples

The following example displays details related to the monitoring for inError packets for configured ports.

```
device# show packet-inerror-detect

Sampling interval 5 secs

Port    Packet inError count State
1/1/1   30                   Operational
1/1/37  10                   ERR-DISABLED
2/1/1   100                  Operational
```

History

Release version	Command history
07.3.00g	This command was introduced.

show pki

Displays information on PKI, including information on certificates and other options.

Syntax

show pki { **certificates** { **local** | **trustpoint** } | **counters** | **crls** | **enrollment-profile** | **entity** | **key** | **logging-statistics** | **trustpoint** }

Parameters

certificates
Displays PKI certificates.

counters
Displays PKI counters.

crls
Displays the PKI certification revocation list if there is one.

enrollment-profile
Displays PKI enrollment profile.

entity
Displays PKI entity.

key
Displays router public keys.

logging-statistics
Displays PKI logging statistics.

trustpoint
Displays PKI trustpoint information.

Modes

User EXEC mode

Examples

The following example shows output for the **show pki certificates local** command.

```
device# show pki certificates local
----------------PKI LOCAL CERTIFICATE ENTRY-----------------
CA: trustRSA
Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number: 4100 (0x1004)
    Signature Algorithm: sha256WithRSAEncryption
        Issuer: C=IN, ST=KA, L=Bangalore, O=Ruckus Arris, OU=NEBU, CN=ROOT RSA
        Validity
            Not Before: Feb 23 16:19:43 2018 GMT
            Not After : Feb 21 16:19:43 2028 GMT
        Subject: CN=ICX RSA, ST=KA, C=IN, O=NEBU, OU=Ruckus Arris
```

The following example shows output for the **show pki certificates trustpoint** command.

```
device# show pki certificates trustpoint
----------------PKI TRUSTPOINT CERTIFICATE ENTRY-----------------
CA: trustRSA
Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number:
            e2:11:82:3f:37:c2:6f:c0
    Signature Algorithm: sha256WithRSAEncryption
        Issuer: C=IN, ST=KA, L=Bangalore, O=Ruckus Arris, OU=NEBU, CN=ROOT RSA
        Validity
            Not Before: Feb 23 05:38:11 2018 GMT
            Not After : Feb 23 05:38:11 2023 GMT
        Subject: C=IN, ST=KA, L=Bangalore, O=Ruckus Arris, OU=NEBU, CN=ROOT RSA
```

The following example shows output for the **show pki counters** command.

```
device# show pki counters
------------PKI-COUNTERS----------
PKI Sessions Started: 3701
PKI Sessions Ended: 3701
PKI Sessions Active: 0
Successful Validations: 35
Failed Validations: 3855
Bypassed Validations: 0
Pending Validations: 5
CRLs checked: 0
CRL - fetch attempts: 0
CRL - failed attempts: 0
```

The following example shows output for the **show pki enrollment-profile** command.

```
device# show pki enrollment-profile
----------------PKI ENROLLMENT PROFILE ENTRY-----------------
  Enrollment Profile: profile1
  Authentication Command: WINN6C3R0LUDAJ.
  Authentication URL: http://WINN6C3R0LUDAJ.
  Enrollment URL: http://ipfvt-mylab.englab.brocade.com/CertSrv/mscep/mscep.dll
  SCEP password: helloutthere
```

The following example shows output for the **show pki entity** command.

```
device# show pki entity
----------------PKI ENTITY ENTRY-----------------
  Entity Name: spatha27
    Common Name: Spatha
    Organization Name: SQA
    Organization Unit Name: ICX
    State Name: KA
    Country Name: IN

----------------PKI ENTITY ENTRY-----------------
  Entity Name: ent1
    Common Name: en1
    State Name: KA
    Country Name: IN
    Location: BLR

----------------PKI ENTITY ENTRY-----------------
  Entity Name: entity1
    Common Name: tester1
    Organization Name: BRCD
    Organization Unit Name: FI
    State Name: BC
    Country Name: CA
    Email: user@brocade.com
    Location: BG
```

The following example shows output for the **show pki key** command.

```
device#  show pki key mypubkey  all
----------------PKI PUBLIC KEY ENTRY-----------------
 Public key of generated EC key pair:
  The key label is marcia_ec
  Public-Key: (384 bit)
  pub:
      04:61:f6:d4:bf:e0:85:8f:2f:70:e3:79:36:d9:22:
      98:ca:3e:6e:10:a3:cd:b9:0a:e9:2d:26:ce:a3:fc:
      96:c5:04:f7:28:6b:fa:fb:e1:36:51:4b:05:05:95:
      da:e7:14:5f:59:68:16:2b:fc:c7:a0:d6:a0:72:85:
      28:dd:54:10:1e:42:51:0d:8e:d7:6b:2f:92:cc:e2:
      ac:f6:f5:89:64:da:54:af:b5:26:e1:f6:a5:25:f2:
      a9:93:3c:9a:b8:93:5b
  ASN1 OID: secp384r1
```

The following example shows output for the **show pki logging-statistics** command.

```
device# show pki logging-statistics
------------------------PKI logging statistics-------------------------------
Type of packet:                     |    TX_PACKETS      |     RX_PACKETS
------------------------------------|--------------------|-----------------
enrollment packets:                 |       0            |          0
authentication packets:             |       1            |          1
revocation check packets:           |       116          |          0
peer certificate download packets:  |       0            |          0
certificate imports through http:   |       0            |          0
Note:enrollment packets can be 2x of actual enrollments depends on server settings
```

The following example shows output for the **show pki trustpoint** command.

```
device# show pki trustpoint
----------------PKI TRUSTPOINT ENTRY-----------------
  CA: trustRSA
  Key Information:
    The key label is icx_rsa_key
    Public-Key: (2048 bit)
    Modulus:
        00:c5:81:6f:98:aa:f8:e4:a8:2d:d9:f3:d7:d0:e7:
        5e:be:59:4b:4c:d0:c9:aa:a8:53:82:dd:2f:df:09:
        c1:78:c5:38:63:c3:d7:73:47:ed:43:6c:d6:d1:ed:
        99:82:e7:51:c6:03:bc:8e:8f:97:e5:1b:b5:71:a1:
        46:f4:a8:b2:bb:6e:61:54:e2:42:1e:63:f8:79:78:
        6b:bd:d8:63:67:c1:b7:6f:78:cc:9d:16:42:df:81:
        d2:98:24:2b:70:60:10:ec:0e:5c:d9:be:7e:e1:a0:
        27:b8:e0:65:73:99:de:18:59:05:e7:7e:df:f1:1e:
        ac:ab:33:7a:7e:6e:d5:99:85:95:fc:c8:a7:1f:c3:
        d2:43:74:2e:c6:15:80:b6:fc:73:4c:23:30:2a:c1:
        26:d0:84:4c:58:96:0b:4c:1c:f0:87:cf:d3:28:68:
        0a:65:f7:fd:33:cb:92:c7:d5:8d:df:7b:9b:03:92:
        d8:75:03:1c:f6:1b:09:b3:6d:3c:2a:7e:6a:02:10:
        21:5c:46:87:46:73:57:7c:66:8f:a4:bb:a4:6b:ae:
        30:d2:63:a0:44:44:6b:48:e2:ab:8e:fa:d4:d7:f7:
        30:87:c1:11:ac:22:9f:e9:10:52:ee:22:70:c6:f7:
        6b:5b:eb:7f:f3:b3:01:a9:d6:25:10:97:1b:9d:7e:
        50:51
    Exponent: 65537 (0x10001)
  Configured Fingerprint for authentication:
    D8:BC:F5:94:BA:72:9D:F3:34:77:FD:AA:5B:A2:FD:B6:59:A3:00:27
  Enrollment Protocol:SCEP

----------------PKI TRUSTPOINT ENTRY-----------------
  CA: trust1
  Entity Name: entity1
    Common Name: tester1
    Organization Name: BRCD
    Organization Unit Name: FI
    State Name: BC
    Country Name: CA
    Email: user@brocade.com
    Location: BG
  Configured Fingerprint for authentication:
    d2:52:b6:5a:1d:a2:95:3b:f4:e6:05:33:84:05:97:16:75:15:bf:04
  Enrollment Protocol:SCEP
  Enrollment Profile: profile1
```

History

Release version	Command history
08.0.70	This command was introduced.

show pod

Displays Ports on Demand (PoD) licensing information.

Syntax

show pod [**unit** *unit_id*]

Parameters

unit*unit_id*

Indicates the stack unit ID number. The *unit_id* can be from 1 through 12.

Modes

Privileged EXEC level.

Usage Guidelines

The command displays PoD license configuration for all ports in a stack unit. The command is supported on RUCKUS ICX 8200devices.

Command Output

The **show pod** command displays the following information:

Output field	Description
Unit-Id	The unit ID number of the PoD port.
PoD license capacity	The port capacity of the PoD license that is purchased.
PoD license capacity used	The number of PoD ports that are upgraded to 10 Gbps port speed.
PoD-ports	The list of PoD ports in the PoD unit.
Lic-Available	Displays whether the license is available for the port.
Lic-Used	Displays whether the license is used by the port.

Examples

The following **show pod** command example output displays PoD licensing information

```
device#show pod
Unit-Id: 1
PoD license capacity:  8
PoD license capacity used:   8

PoD-ports    Lic-Available Lic-Used
1/2/1      Yes             Yes
1/2/2      Yes             Yes
1/2/3      Yes             Yes
1/2/4      Yes             Yes
1/2/5      Yes             Yes
1/2/6      Yes             Yes
1/2/7      Yes             Yes
1/2/8      Yes             Yes

Unit-Id: 11
PoD license capacity:  8
PoD license capacity used:   8

PoD-ports    Lic-Available Lic-Used
11/2/1     Yes             Yes
11/2/2     Yes             Yes
11/2/3     Yes             Yes
11/2/4     Yes             Yes
11/2/5     Yes             Yes
11/2/6     Yes             Yes
11/2/7     Yes             Yes
11/2/8     Yes             Yes
```

show policy-routing

Displays information on policy-based routing (PBR) at the global or interface level.

Syntax

show policy-routing { **ipv4** | **ipv6** { **global** | **interface** { **all** | **ethernet** [*unit/slot/port*] | **lag** [*id*] | **ve** [*id*] } } }

Parameters

ipv4

Specifies that PBR information be shown for IPv4 protocol.

ipv6

Specifies that PBR information be shown for IPv6 protocol.

global

Displays IPv4 or IPv6 global PBR configuration and ports.

interface

Displays interface-level PBR information.

all

Displays information for all interfaces configured with PBR.

ethernet [*unit/slot/port*]

Displays PBR information for all Ethernet interfaces or for a specified port.

lag [*id*]

Displays PBR information for all LAGs or for a specified LAG.

ve [*id*]

Displays PBR information for all virtual interfaces or for a specified virtual interface.

Modes

All modes

Examples

The following examples show the IPv4 policy-based routing applied on device interfaces.

```
device(config)# show policy-routing ipv4 global
        Configured, pbrmap, Active
        Active Port List:
        ethernet
                1/1/2, 1/1/3, 1/1/4, 1/1/5, 1/1/6, 1/1/7, 1/1/8, 1/1/9
        ve
                Ve 131, Ve 132

device# show policy-routing ipv4 interface all
ve 11 :
        Configured, pbrmap, Active

device# show policy-routing ipv4 interface ethernet
ethernet 1/1/1:
        Configured, pbrmap, Active

device# show policy-routing ipv4 interface ethernet 1/1/1
ethernet 1/1/1:
        Configured, pbrmap, Active
```

The following examples show the IPv6 policy-based routing applied on device interfaces.

```
device# show policy-routing ipv6 global
        Configured, pbrv6_rmap, Active
        Active Port List:
        ve
                Ve 131, Ve 132

device# show policy-routing ipv6 interface all
ve 11 :
        Configured, pbrv6_rmap, Active

device# show policy-routing ipv6 interface ve
ve 11 :
        Configured, pbrv6_rmap, Active

device# show policy-routing ipv6 interface ve 11
ve 11:
        Configured, pbrv6_rmap, Active
```

History

Release version	Command history
08.0.95	This command was introduced.

show port security

Displays the port security information.

Syntax

show port security [**ethernet** *stack/slot/port* [**restricted-macs**]]

show port security mac [**ethernet** *stack/slot/port* | **unit** *stack-unit-num*]

show port security statistics [**ethernet** *stack/slot/port* | **unit** *stack-unit-num* [**brief**]]

Parameters

ethernet *stack/slot/port*
: Specified Ethernet interface.

restricted-macs
: Displays information about restricted MAC addresses on the specified port.

mac
: Displays secure MAC addresses configured on a device.

unit *stack-unit-num*
: Specifies the stack unit number.

statistics
: Displays port security statistics.

brief
: Displays brief information.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Port security configuration mode

Port security interface configuration mode

Usage Guidelines

The **show port security** command without any options displays the port security settings for all the ports.

Command Output

The **show port security ethernet** command displays the following information:

Output field	Description
Port	The slot and port number of the interface.
Security	Whether port security has been enabled on the interface.
Violation	The action to be undertaken when a security violation occurs, either "shutdown" or "restrict".
Shutdown-Time	The number of seconds a port is shut down following a security violation, if the port is set to "shutdown" when a violation occurs.
Age-Time	The amount of time, in minutes, MAC addresses learned on the port will remain secure.
Max-MAC	The maximum number of secure MAC addresses that can be learned on the interface.

The **show port security mac** command displays the following information:

Output field	Description
Port	The slot and port number of the interface.
Num-Addr	The number of MAC addresses secured on this interface.
Secure-Src-Addr	The secure MAC address.
Resource	Whether the address was secured using a local or global resource.
Age-Left	The number of minutes the MAC address will remain secure.
Shutdown/Time-Left	Whether the interface has been shut down due to a security violation and the number of seconds before it is enabled again.

NOTE
After every switchover or failover, the MAC "Age-Left" timer is reset to start because it is not synchronized between the master and the standby stack unit.

The **show port security statistics** command displays the following information:

Output field	Description
Port	The slot and port number of the interface.
Total-Addrs	The total number of secure MAC addresses on the interface.
Maximum-Addrs	The maximum number of secure MAC addresses on the interface.
Violation	The number of security violations on the port.
Shutdown/Time-Left	Whether the port has been shut down due to a security violation and the number of seconds before it is enabled again.

Examples

The following example displays the port security settings for port 1/1/1.

```
device# show port security ethernet 1/1/1
Port  Security Violation Shutdown-Time Age-Time  Max-MAC
----- -------- --------- ------------- --------- -------
1/1/1 disabled shutdown   10             10        1
```

The following example shows the list of secure MAC addresses configured on the device.

```
device# show port security mac
Port   Num-Addr  Secure-Src-Addr  Resource  Age-Left  Shutdown/Time-Left
-----  --------  ---------------  --------  --------- ------------------
1/1/1   1        0000.018.747c     Local     10          no
```

The following example displays port security statistics for interface 1/1/1.

```
device# show port security statistics ethernet 1/1/1
Port   Total-Addrs Maximum-Addrs Violation Shutdown/Time-Left
-----  ----------- ------------- --------- ------------------
1/1/1   1          1               0          no
```

show power-savings-statistics

Displays the power savings statistics for the device.

Syntax

show power-savings-statistics

Modes

User EXEC configuration mode

Usage Guidelines

Use this command to display the Energy Efficient Ethernet state, traffic port utilization percentage, power rating in megawatts, power consumed in megawatts, power conserved in megawatts, and the power efficiency of the system as a percentage.

Examples

The following example displays the power savings statistics for the device.

```
device(config)# show power-savings-statistics

Warning - The below is a theoretical calibrated estimation, there may be +- 5% deviation  on the data.


The Power statistics of the switch for the last 5 minutes is


The total power consumption of the switch for the  past 5 minutes  is ------------------------> 76064
milli Watts

The total power savings after enabling EEE for the past 5 minutes  is ------------------------> 3598
milli Watts

The power efficiency of the Switch after Enabling EEE for the past 5 min is ------------------> 4%

                        The Port specific statistics for the past 5 minutes is


Port   EEE-State      Traffic           Power_Rating    Power_Consumed  Power_Conserved
Power_Efficiency
                  Port Utilization%        in mW             in mW          in mW               in%

1/1/1   Enable           0                333               7              257                  77
1/1/2   Enable           0                 33               76             257                  77
1/1/3   Enable           0                333               76             257                  77
1/1/4   Enable           0                333               76             257                  77
1/1/5   Enable           0                333               76             257                  77
1/1/6   Enable           0                333               76             257                  77
1/1/13  Enable           0                333               76             257                  77
1/1/14  Enable           0                333               76             257                  77
1/1/15  Enable           0                333               76             257                  77
1/1/16  Enable           0                333               76             257                  77
1/1/21  Enable           0                333               76             257                  77
1/1/22  Enable           0                333               76             257                  77
1/1/23  Enable           0                333               76             257                  77
1/1/24  Enable           0                333               76             257                  77
1/2/1   Enable           0                  0               0              0                     0
1/2/2   Enable           0                  0               0              0                     0
1/2/3   Enable           0                  0               0              0                     0
1/2/4   Enable           0                  0               0              0                     0
```

History

Release version	Command history
08.0.30	This command was introduced.

show pre-8090-startup-backup

Displays the current startup-config and backup startup-config files when a backup was created on an upgrade to FastIron 08.0.90.

Syntax

show pre-8090-startup-backup

Modes

Privileged EXEC mode

Usage Guidelines

If no startup-config file is present or if no backup file is present, the system displays an error message.

If a pre-08.0.90 backup startup-config file is present, the system displays the message "pre-8.0.90 backup startup-config: generated by xx version number."

Downgrading from a FastIron 08.0.90 or later image to a pre-08.0.90 FastIron image may break a stack because of stacking port representation changes. Therefore, the system automatically backs up the startup-config file in case the customer needs to downgrade to the original release after the upgrade.

The backup file is only for use when you have upgraded to FastIron release 08.0.90 or later and then need to perform a downgrade. It is not intended for any other purpose.

Whenever you perform an upgrade from a pre-08.0.90 release to FastIron release 08.0.90 or later, the system automatically backs up its startup-config file when you enter the **write terminal** command. Whenever a system downgrades from FastIron release 08.0.90 or later to a pre-08.0.90 release, the system renames the backup file as startup-config before the downgrade and reloads.

The backup file replaces the startup-config file during the downgrade. There is no merge. Therefore, all configuration changes made after the software upgrade are lost. If you have changed any configuration following the upgrade, be sure to copy the startup-config file or running-config to the directory tftp/scp/usb using the command **copy startup-config** or the command **copy running-config**. Then manually enter the configuration differences after downgrading.

Examples

The following example shows command output when no pre-8090 backup is present.

```
device# show pre-8090-startup-backup
INFO: empty config data in pre-8090 startup config backup.
```

The following example displays startup configuration for an ICX 7650 device as a FastIron 08.0.80 release.

```
ICX7650-48F Router# show pre-8090-startup-backup
!
Startup-config data location is flash memory
!
Startup configuration:
!
ver 08.0.80
!
stack unit 1
  module 1 icx7650-48p-port-management-module
module 2 icx7600-qsfp-2port-80g-module
module 3 icx7650-qsfp-4port-160g-module
priority 128
stack-port 1/3/1 1/3/3
stack enable
stack mac 609c.9f52.5eb9
!
```

History

Release version	Command history
08.0.90	This command was introduced.

show priority-flow-control

Displays the priority flow control (PFC) on the system.

Syntax

show priority-flow-control

Modes

Privileged EXEC mode

Examples

The following example shows the PFC status of all priority groups.

```
Device# show priority-flow-control

Global PFC Status: Enabled
PFC Enabled on PG0
PFC Disabled on PG1
PFC Disabled on PG2
PFC Disabled on PG3
```

The following example shows the PFC status disabled.

```
Device# show priority-flow-control

Global PFC Status: Disabled
```

History

Release version	Command history
08.0.10	This command was introduced.

show protected-port

Displays the system-wide configuration status of protected ports.

Syntax

show protected-port

Modes

Privileged EXEC mode

Examples

The following example displays the system-wide status of protected ports.

```
device# show protected-port
  System-Wide Protected Ports: ethe 1/1/1 ethe 2/1/1 ethe 3/1/1
```

History

Release version	Command history
08.0.61	This command was introduced.

show pstat

Displays the CPU packet statistics counters, including the counts and the rate at which packets were received.

Syntax

show pstat *unit-ID*

Parameters

unit-ID

Specifies the stack unit ID.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show pstat** command displays the following information:

Output field	Description
l2-dest-mac	CPU packets matching the Layer 2 destination MAC address.
l2-dest-mac-type	CPU packets matching the Layer 2 destination MAC type.
l2-source-mac	CPU packets matching the Layer 2 source MAC address.
input-port	CPU packets matching the input port.
Count	CPU packets received.

Examples

The following example shows output for the **show pstat** command for stack unit 1.

```
device(config)#show pstat 1

input-port        l2-dest-mac       l2-dest-mac-type  Count
-----------------------------------------------------------
mgmt1             0100.5e00.0002    Multicast         19
11/1/7            0180.c200.0000    Multicast         10
2/1/7             0180.c200.000e    Multicast         1
11/1/7            0180.c200.000e    Multicast         1
mgmt1             0180.c200.0000    Multicast         10
mgmt1             cf4e.2445.0400    Multicast         19
mgmt1             778e.f8d4.00c0    Multicast         63
mgmt1             ffff.ffff.ffff    Broadcast         23
-----------------------------------------------------------

Number of Entries = 8
```

History

Release version	Command history
08.0.90	This command was introduced.

show pstat dump

Displays the contents of the CPU queue and port status.

Syntax

show pstat dump *unit-ID*

Parameters

unit-ID

Specfies the stack unit ID.

Modes

User EXEC mode

Priviled EXEC mode

Global configuration mode

Examples

The following example shows output for the RUCKUS ICX 7850, ICX 7650, and ICX 7550 **show pstat dump** command for stack unit 2.

```
device# show pstat dump 2

COS-Q Config Details - Rate Limit & Packet Type

COS-Q |   pps | Burst |                        PKT-TYPE |
    0 |  1000 |   200 |                Prio-0 / Default |
    1 |   750 |   500 |                          Prio-1 |
    2 |  1000 |  1000 |               Prio-2 / NHOP(IP) |
    3 |  3000 |   500 |                          Prio-3 |
    4 |  3000 |  1000 |          Prio-4 / L3/MC control |
    5 |  3000 |  1000 |             Prio-5 / L3 control |
    6 |  4000 |  1000 |      Prio-6 / L2 control / VRRP |
    7 |  4000 |  2000 |  Prio-7 / SPX/Stacking control |
    8 |  3000 |  1000 |           Prio-12 (STK LOW PRI) |
    9 |  4000 |  3000 |           Prio-13 (STK MED PRI) |
   10 |  1000 |  1000 |                             UDLD |
   11 |    50 |   250 |                             NONE |
   12 |   750 |   500 |         MCAST MISS/IPMCAST MISS |
   13 |   100 |  5000 |              SFLOW (SRC & DEST) |
   14 |   500 |   200 |                         Openflow |
   15 |    10 |    10 |                           Bicast |
   16 |  1024 |  2048 |                         FlexAuth |
   17 |    10 |    10 |                             NONE |
   18 |    10 |    10 |                             NONE |
   19 |    10 |    10 |                          L2 MOVE |
   20 |  5000 |  3000 |          Prio-14 (STK HIGH PRI) |

Hardware COS-Q Counters

COS-Q |             PKTS |       PKTS-DROP |
    0 |                0 |               0 |
    1 |                0 |               0 |
    2 |                0 |               0 |
    3 |                0 |               0 |
    4 |                0 |               0 |
    5 |                0 |               0 |
    6 |                0 |               0 |
    7 |                0 |               0 |
    8 |                0 |               0 |
    9 |                0 |               0 |
   10 |                0 |               0 |
   11 |                0 |               0 |
   12 |                0 |               0 |
   13 |                0 |               0 |
   14 |                0 |               0 |
   15 |                0 |               0 |
   16 |                0 |               0 |
   17 |                0 |               0 |
   18 |                0 |               0 |
   19 |                0 |               0 |
   20 |                0 |               0 |


Software Q Counters.

 COS-Q      PKTS |  APP-Q      PKTS |         Tx        Rx   Rx-Drop       In-Q
     0         0 |     10         0 |          0         0         0          0
     1         0 |      9         0 |          0         0         0          0
     2         0 |      8         0 |          0         0         0          0
     3         0 |      7         0 |          0         0         0          0
     4         0 |      6         0 |          0         0         0          0
     5         0 |      5         0 |          0         0         0          0
     6         0 |      4         0 |          0         0         0          0
     7         0 |      1         0 |          0         0         0          0
     8         0 |      3         0 |          0         0         0          0
     9         0 |      2         0 |          0         0         0          0
    10         0 |      1         0 |          0         0         0          0
```

```
    11         0 |     20         0 |          0         0         0         0
    12         0 |     12         0 |          0         0         0         0
    13         0 |     13         0 |          0         0         0         0
    14         0 |     14         0 |          0         0         0         0
    15         0 |     15         0 |          0         0         0         0
    16         0 |     16         0 |          0         0         0         0
    17         0 |     17         0 |          0         0         0         0
    18         0 |     18         0 |          0         0         0         0
    19         0 |     19         0 |          0         0         0         0
    20         0 |      0         0 |          0         0         0         0

Pkts Processed: 0, Total Pkts dropped (AppQ-full): 0
Port Counters.


   PORT |    COUNT-BCM |    COUNT-APP |         DROP |
```

The following example shows output for the RUCKUS ICX 8200 **show pstat dump** command.

```
ICX8200-24F Router#show pstat dump 1

Hardware COS-Queue Counters
COS-Queue |             PKTS |       PKTS-DROP |
        0 |                0 |               0 |
        1 |                0 |               0 |
        2 |                0 |               0 |
        3 |                0 |               0 |
        4 |                0 |               0 |
        5 |                0 |               0 |
        6 |              165 |               0 |
        7 |            14810 |               0 |
        8 |                0 |               0 |
        9 |                0 |               0 |
       10 |                0 |               0 |
       11 |                0 |               0 |
       12 |                0 |               0 |
       13 |                0 |               0 |
       14 |                0 |               0 |
       15 |                0 |               0 |


Software Queue Counters.
COS-Queue       PKTS | APP-Queue       PKTS |          Tx          Rx    Rx-Drop   In-Queue
        0          0 |         8          0 |           0           0          0          0
        1          0 |         7          0 |           0           0          0          0
        2          0 |         6          0 |           0           0          0          0
        3          0 |         5          0 |           0           0          0          0
        4          0 |         4          0 |           0           0          0          0
        5          0 |         3          0 |           0           0          0          0
        6        165 |         2        164 |         165         164          0          1
        7      14810 |         1      14810 |       14810       14810          0          0
        8          0 |         9          0 |           0           0          0          0
        9          0 |        10          0 |           0           0          0          0
       10          0 |        11          0 |           0           0          0          0
       11          0 |        12          0 |           0           0          0          0
       12          0 |        13          0 |           0           0          0          0
       13          0 |        14          0 |           0           0          0          0
       14          0 |        15          0 |           0           0          0          0
       15          0 |         0          0 |           0           0          0          0

Pkts Processed: 14975, Total Pkts dropped (AppQueue-full): 0, Stack pkts in hash 0

Port Counters
   PORT |    COUNT-APP |
  1/2/1 |        14810 |
  1/2/3 |          164 |
```

History

Release version	Command history
08.0.90	This command was introduced.
10.0.00	Added ICX 8200 output.

show pstat hist

Displays per-second CPU packet statistics for the specified period of time.

Syntax

show pstat hist *seconds unit-ID*

Parameters

seconds

Specifies the period of time for which per-second CPU packet statistics are displayed. Maximum number of seconds is 60.

unit-ID

Specfies the stack unit ID.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example show output for the **show pstat hist** command:

```
device# show pstat hist 5 3

Id/FIQ   0     1     2     3     4     5     6     7     8     9    10    11    12    13    14    15
16    17    18    19 | Total
-------------------------------------------------------------------------------------------------
1) E:    6     0     1     0    10     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    17
   P:    6     0     1     0    10     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    17

Ports/Count : 1/1/3: 1 , 1/1/4: 1 , 1/1/5: 1 , 1/1/6: 1 , 1/1/7: 1 , 1/1/8: 1 , 1/1/9: 1 , 1/1/10: 1 ,
1/1/24: 1 , 3/1/16: 1 , 3/2/3: 7 , Total : 17
2) E:   16     0     6     0     1     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    23
   P:   16     0     6     0     1     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    23

Ports/Count : 3/1/16: 1 , 3/2/3: 22 , Total : 23
3) E:    6     0     3     0    11     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    20
   P:    6     0     3     0    11     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    20

Ports/Count : 1/1/3: 1 , 1/1/4: 1 , 1/1/5: 1 , 1/1/6: 1 , 1/1/7: 1 , 1/1/8: 1 , 1/1/9: 1 , 1/1/10: 1 ,
1/1/23: 1 , 1/1/24: 1 , 3/1/16: 1 , 3/2/3: 9 , Total : 20
4) E:    6     0     0     0     1     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |     7
   P:    6     0     0     0     1     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |     7

Ports/Count : 3/1/16: 1 , 3/2/3: 6 , Total : 7
5) E:   11     0     0     0     9     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    20
   P:   11     0     0     0     9     0     0     0     0     0     0     0     0     0     0
0     0     0     0     0     0 |    20

Ports/Count : 1/1/3: 1 , 1/1/4: 1 , 1/1/5: 1 , 1/1/6: 1 , 1/1/7: 1 , 1/1/8: 1 , 1/1/9: 1 , 1/1/10: 1 ,
1/1/24: 1 , 3/2/3: 11 , Total : 20
```

History

Release version	Command history
08.0.90	This command was introduced.

show pstat status

Displays the fields specified for collecting CPU packet statistics and whether CPU packet statistics collection is enabled.

Syntax

show pstat status

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example shows output for the **show pstat status** command.

```
device# show pstat status

Number of Keys: 2
l2-dest-mac
input-port

pstat Feature Enabled
```

History

Release version	Command history
08.0.90	This command was introduced.

show ptp-clock

Displays the PTP transparent clock information.

Syntax

show ptp-clock

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example shows output for the **show ptp-clock** command.

```
device# show ptp-clock
Clock : Transparent
Clock ID : 00e0.5200.0100
PTP Enabled Ports : e 1/1/5 e 1/1/10 to 1/1/15
Packet Type : Ethernet
Option : End-to-End
Primary Domain : 0
Step Type : One-step
```

The following example shows output for the **show ptp-clock** command in a stack unit..

```
device# show ptp-clock unit-id 1
Clock : Transparent
Clock ID : 00e0.5200.0100
PTP Enabled Ports : e 1/1/5 e 1/1/10 to 1/1/15
Packet Type : Ethernet
Option : End-to-End
Primary Domain : 0
Step Type : One-step
```

History

Release version	Command history
08.0.95	This command was introduced.

show pvlan

Displays the PVLAN information.

Syntax

show pvlan [*vlan-id*]

Parameters

vlan-id

Displays the information for the PVLAN with the specified VLAN ID.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

VLAN configuration mode

Usage Guidelines

If the VLAN ID is not specified, the command displays the default VLAN ID information. The **show pvlan** command is not supported on software-forwarding platforms.

This command displays the PVLAN configuration with respect to the primary VLAN and its associated secondary VLANs and to display the member ports, promiscous ports, and inter-switch link ports of a PVLAN.

Examples

The following example displays sample output of the **show pvlan** command.

```
device# show pvlan
PVLAN: primary VLAN 100
 Port 1/1/4 1/1/10 1/1/11
Community VLAN 102
 Port 1/1/1 1/1/2 1/1/10 1/1/11
 Promiscuous Port: 1/1/4
 Inter switch link Port: 1/1/10 1/1/11
 BpduGuard enabled Port: 1/1/1 1/1/2
Isolate VLAN 101
 Port 1/1/3 1/1/10 1/1/11
 Promiscuous Port: 1/1/4
 Inter switch link Port: 1/1/10 1/1/11
 BpduGuard enabled Port: 1/1/1 1/1/2
```

show pvstplus-protect-ports

Displays the status of the PVST+ Protect feature, configured by means of the **pvstplus-protect** command.

Syntax

show pvstplus-protect-ports [**ethernet** *unit/slot/port* [**to** *unit/slot/port*]]

Parameters

ethernet

Specifies an Ethernet port.

unit/slot/port

Number of an Ethernet port. Ranging is allowed by means of the **to** keyword.

to

Enables optional ranging.

Modes

Privileged EXEC mode

Examples

The following example displays the status of PVST+ Protect on all Ethernet interfaces, including the number of dropped PVST+ BPDUs.

```
device# show pvstplus-protect-ports
        Port    PVST Drop Count
        1/1/1   11
        1/1/2   0
        1/1/3   0
        1/1/4   0
```

The following example displays the status of PVST+ Protect on a single Ethernet interface.

```
device# show pvstplus-protect-ports ethernet 1/1/1
PVST-protect is enabled on port 1/1/1.  PVST drop count is 11
```

The following example displays the status of PVST+ Protect on a range of Ethernet interfaces.

```
device# show pvstplus-protect-ports ethernet 1/1/1 to 1/1/4
```

History

Release version	Command history
08.0.30mb	This command was introduced.

show qos egress-buffer-profile

Displays information about egress buffer profiles.

Syntax

show qos egress-buffer-profile[*user-profile-name*|**all**]

Parameters

user-profile-name

Displays information for the specified egress buffer profile.

all

Displays information for all egress buffer profiles configured in the system and a list of all ports attached to any egress buffer profile.

Modes

Global configuration mode

Examples

The following example displays information for an egress buffer profile named egress1.

```
device# show qos egress-buffer-profile egress1

Egress Buffer Profile: egress1
Ports attached:  1/1/2
Per Queue Details:       Share Level:
Queue 0                  level4-1/9
Queue 1                  level3-1/16
Queue 2                  level3-1/16
Queue 3                  level3-1/16
Queue 4                  level3-1/16
Queue 5                  level3-1/16
Queue 6                  level3-1/16
Queue 7                  level2-1/32
```

History

Release version	Command history
08.0.10	This command was introduced.

show qos ingress-buffer-profile

Displays information about ingress buffer profiles.

Syntax

show qos ingress-buffer-profile [*user-profile-name* | **all**]

Parameters

user-profile-name

Displays information for the specified ingress buffer profile.

all

Displays information for all the ingress buffer profiles configured in the system and a list of their XOFF threshold levels.

Modes

Global configuration mode

Examples

The following example displays information for all the ingress buffer profiles configured in the system and their XOFF threshold levels.

```
Device(config)# show qos ingress-buffer-profile all

Ingress Buffer Profile: i1
Ports attached:  1/1/1
Per PG Detail:           XOFF Level:
PG 0                     level1-1/64
PG 1                     level3-1/16
PG 2                     level4-1/9
PG 3                     level5-1/5

Ingress Buffer Profile: ing1
Ports attached:  --
Per PG Detail:           XOFF Level:
PG 0                     level6-1/3
PG 1                     level2-1/32
PG 2                     level2-1/32
PG 3                     level2-1/32
```

History

Release version	Command history
08.0.20	This command was introduced.

show qos priority-to-pg

Displays priority-to-priority-group (PG) mapping for priority flow control (PFC).

Syntax

show qos priority-to-pg

Modes

Global configuration mode

Usage Guidelines

This command displays priority-to-PG mapping for the following flow control modes:

- PFC
- Symmetrical flow control
- Asymmetrical flow control

Examples

The following example shows priority-to-PG mapping for PFC.

```
Device(config)# show qos priority-to-pg

QoS Internal Priority 0 mapped to Priority Group 0
QoS Internal Priority 1 mapped to Priority Group 0
QoS Internal Priority 2 mapped to Priority Group 1
QoS Internal Priority 3 mapped to Priority Group 1
QoS Internal Priority 4 mapped to Priority Group 1
QoS Internal Priority 5 mapped to Priority Group 2
QoS Internal Priority 6 mapped to Priority Group 2
QoS Internal Priority 7 mapped to Priority Group 4
```

The following example shows priority-to-PG mapping for 802.3x (Flow-Control). Honor is enabled.

```
Device(config)# show qos priority-to-pg

QoS Internal Priority 0 mapped to Priority Group 0
QoS Internal Priority 1 mapped to Priority Group 0
QoS Internal Priority 2 mapped to Priority Group 1
QoS Internal Priority 3 mapped to Priority Group 1
QoS Internal Priority 4 mapped to Priority Group 1
QoS Internal Priority 5 mapped to Priority Group 2
QoS Internal Priority 6 mapped to Priority Group 2
QoS Internal Priority 7 mapped to Priority Group 4
```

The following example shows priority-to-PG mapping for symmetrical flow control for 802.3x (Flow-Control) in Both mode (Generate and Honor are enabled) or Generate-only mode.

```
Device(config)# symmetrical-flow-control enable
Device(config)# show qos priority-to-pg

QoS Internal Priority 0 mapped to Priority Group 7
QoS Internal Priority 1 mapped to Priority Group 7
QoS Internal Priority 2 mapped to Priority Group 7
QoS Internal Priority 3 mapped to Priority Group 7
QoS Internal Priority 4 mapped to Priority Group 7
QoS Internal Priority 5 mapped to Priority Group 2
QoS Internal Priority 6 mapped to Priority Group 2
QoS Internal Priority 7 mapped to Priority Group 4
```

The following example enables flow control on all priorities and shows the priority-to-PG mapping.

```
Device(config)# symmetrical-flow-control enable all
Device(config)# show qos priority-to-pg

QoS Internal Priority 0 mapped to Priority Group 7
QoS Internal Priority 1 mapped to Priority Group 7
QoS Internal Priority 2 mapped to Priority Group 7
QoS Internal Priority 3 mapped to Priority Group 7
QoS Internal Priority 4 mapped to Priority Group 7
QoS Internal Priority 5 mapped to Priority Group 7
QoS Internal Priority 6 mapped to Priority Group 7
QoS Internal Priority 7 mapped to Priority Group 4
```

History

Release version	Command history
08.0.10	This command was introduced.

show qos scheduler-profile

Displays information about scheduler profiles.

Syntax

show qos scheduler-profile { **all** *user-profile-name* }

Parameters

all

Displays information for all the scheduler profiles configured in the system and a list of all the ports attached to any scheduler profile.

user-profile-name

Displays information for the specified scheduler profile only.

Modes

Global configuration mode

Usage Guidelines

A scheduler profile must be configured before it can be displayed.

Information can be displayed for a maximum of eight scheduler profiles.

Examples

The following example displays information for a scheduler profile named user1.

```
device# show qos scheduler-profile user1

User Scheduler Profile: user1   Scheduling Option: Weighted round-robin
Ports attached:  1/1/1
Per Queue details:    Bandwidth%
Traffic Class 0             1%
Traffic Class 1             1%
Traffic Class 2            10%
Traffic Class 3            10%
Traffic Class 4            10%
Traffic Class 5            10%
Traffic Class 6            20%
Traffic Class 7            38%
```

The following example displays information for all the scheduler profiles configured in the system.

```
Device(config)# show qos scheduler-profile all
bandwidth scheduling mechanism: mixed weighted priority with strict priority
Profile qosp7     : Priority7(Highest) Set as strict priority
Profile qosp6     : Priority6          Set as strict priority
Profile qosp5     : Priority5          bandwidth requested  25% calculated  25%
Profile qosp4     : Priority4          bandwidth requested  15% calculated  15%
Profile qosp3     : Priority3          bandwidth requested  15% calculated  15%
Profile qosp2     : Priority2          bandwidth requested  15% calculated  15%
Profile qosp1     : Priority1          bandwidth requested  15% calculated  15%
Profile qosp0     : Priority0(Lowest)  bandwidth requested  15% calculated  15%
```

History

Release version	Command history
08.0.10	This command was introduced.
08.0.20	This command was modified to display information for multicast queue weights.

show qos sflow-rate-limit

Displays the CPU rate limit for sFlow.

Syntax

show qos sflow-rate-limit

Modes

Global configuration mode

Examples

The following example displays the CPU rate limit for sFlow.

```
device(config)# show qos sflow-rate-limit
Queue-Num       Rate-Limt       Burst-Size
Queue13           100             5000
device(config)#
```

History

Release version	Command history
08.0.40	This command was introduced.

show qos-profiles

Displays information about QoS profiles

Syntax

show qos-profiles{**all**|*name*}

Parameters

all

Displays information for all profiles.

name

Displays information for the specified profile.

Modes

Global configuration mode

Examples

The following example displays information, including multicast queue weights, for all the queues.

```
device# show qos-profiles all
bandwidth scheduling mechanism: mixed weighted priority with strict priority
Unicast Traffic
Profile qosp7     : Priority7(Highest) Set as strict priority
Profile qosp6     : Priority6          Set as strict priority
Profile qosp5     : Priority5          bandwidth requested  25% calculated  25%
Profile qosp4     : Priority4          bandwidth requested  15% calculated  15%
Profile qosp3     : Priority3          bandwidth requested  15% calculated  15%
Profile qosp2     : Priority2          bandwidth requested  15% calculated  15%
Profile qosp1     : Priority1          bandwidth requested  15% calculated  15%
Profile qosp0     : Priority0(Lowest)  bandwidth requested  15% calculated  15%
Multicast Traffic
Profile qosp7+qosp6                    : Priority7(Highest),6      Set as strict priority
Profile qosp5                          : Priority5                 bandwidth requested  25%
calculated  25%
Profile qosp4+qosp3+qosp2              : Priority4,3,2             bandwidth requested  45%
calculated  45%
Profile qosp1+qosp0                    : Priority1,0(Lowest)       bandwidth requested  30%
calculated  30%
```

History

Release version	Command history
08.0.20	This command was modified to display information for multicast queue weights.

show qos-tos

Displays mappings in the DSCP to the forwarding priority portion of the QoS information display.

Syntax

show qos-tos

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example displays mappings in the DSCP to forwarding priority portion of the QoS information display. To read this part of the display, select the first part of the DSCP value from the d1 column and select the second part of the DSCP value from the d2 row.

```
device# show qos-tos
DSCP-Priority map: (dscp = d1d2)
     d2|  0   1   2   3   4   5   6   7   8   9
  d1   |
  -----+-----------------------------------------
   0   |  1
   0   1   1   1
   0   0   0   5
   1
   1   |  6   1   1   1   1   1   4
   2   2  2
   2   |  2   2   2   2   2
   3   3  3   3   3
   3   |  3   3   0
   4   4  4   4   4   4   4
   4   |  7
   5   5  5   5   5   5   5   3
   6
   5   |  6   6   6   6   6   6   6
   7   7  7
   6   |  7   7   7   7
```

show radius servers

Displays the current status of the linked RADIUS servers.

Syntax

show radius servers

Modes

User EXEC mode

Command Output

The **show radius servers** command displays the following information:

Output field	Description
Server	The IP address of the RADIUS server.
Type	What type of functionality the RADIUS server provides.
Opens	The number of times the path to the RADIUS server opens.
Closes	The number of times the path to the RADIUS server closes.
Timeouts	The number of times the path to the RADIUS server times out.
Status	The current status of the path to the RADIUS server.

Examples

The following example shows output for the **show radius servers** command.

```
device> show radius servers

-------------------------------------------------------------------------------
Server                      Type      Opens     Closes   Timeouts   Status
-------------------------------------------------------------------------------
10.21.240.60                 any          0          0          0   active
```

show rate-limit broadcast

Displays the broadcast limit configured on the device.

Syntax

show rate-limit broadcast

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example is sample output from the **show rate-limit broadcast** command. The output displays the broadcast limit or broadcast and multicast limit for each port to which it applies.

```
device# show rate-limit broadcast

Broadcast/Multicast Limit Settings:
Port    Limit           Packets/Bytes      Packet Type(s)
4       1245184         Bytes              Broadcast + Multicast Bytes
14      65536           Packets            Broadcast only
23      131072          Packets            Broadcast + Multicast
```

show rate-limit input

Displays the fixed rate limiting configuration.

Syntax

show rate-limit input

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show rate-limit input** command displays the following information.

Output field	Description
Total rate-limited interface count	The total number of ports that are configured for fixed rate limiting.
Port	The configured port number.
Configured Input Rate	The maximum rate requested for inbound traffic. The rate is measured in kilobits per second (kbps).
Actual Input Rate	The actual maximum rate provided by the hardware. The rate is measured in kbps.

Examples

The following example is sample output from the **show rate-limit input** command. The command lists the ports on which fixed rate limiting is configured.

```
device# show rate-limit input
Total rate-limited interface count: 5.
    Port       Configured Input Rate    Actual Input Rate
    1/1/1      65000                    65000
    1/1/2      195000                   195000
    1/1/6      1950                     1950
    1/5/2      230432                   230000
    1/5/6      234113                   234000
```

show rate-limit output-shaping

Displays the configured outbound rate shaper.

Syntax

show rate-limit output-shaping

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example is sample output from the **show rate-limit output-shaping** command. The display lists the ports on a device, the configured outbound rate shaper on a port and for a priority for a port.

```
device# show rate-limit output-shaping

Outbound Rate Shaping Limits in Kbps:
Port     PortMax     Prio0     Prio1     Prio2     Prio3     Prio4     Prio5     Prio6     Prio7
1/1/1    -               -         -         -         -         -         -         651
1/1/2    1302            -         -         -         -         -         -         -
1/1/5    651             -         -         -         -         -         -         -
```

show rate-limit unknown-unicast

Displays the unknown unicast limit for each port region to which it applies.

Syntax

show rate-limit unknown-unicast

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example is sample output from the **show rate-limit unknown-unicast** command. The output displays the unknown unicast limit for each port region to which it applies.

```
device# show rate-limit unknown-unicast
Unknown Unicast Limit Settings:
Port Region    Combined Limit    Packets/Bytes
1 - 12         524288            Packets
13 - 24        65536             Bytes
```

show rear-module

Displays operational status and configuration of the rear module.

Syntax

show rear-module

Modes

Privileged Exec mode

Usage Guidelines

The command applies to ICX 7650 devices only.

Examples

The following example shows an ICX 7650 unit with the rear module operating in default mode (100-Gbps stacking).

```
ICX7650-48P Router# show rear-module
The rear module operates in stacking mode with 100G speed.
The rear module is configured in stacking mode with 100G speed.
```

History

Release version	Command history
08.0.70	This command was introduced.

show relative-utilization

Displays utilization percentages for an uplink.

Syntax

show relative-utilization *num*

Parameters

num

Specifies the utilization list number. Valid values range from 1 through 4.

Modes

User EXEC mode

Usage Guidelines

After you configure an uplink utilization list, you can display the list to observe the percentage of uplink bandwidth that each downlink port used during the most recent 30-second port statistics. The number of packets sent and received between the two ports is listed, as well as the ratio of each downlink port's packets relative to the total number of packets on the uplink.

Examples

The following is sample output from the **show relative-utilization** command.

```
device> show relative-utilization 2

uplink: ethe 1/1/23
30-sec total uplink packet count = 0
packet count ratio (%)
1/1/1:---
```

History

Release version	Command history
09.0.00	This command was deprecated.
09.0.10c	Support for this command was restored.

show reload

Displays how much time is remaining before a scheduled system reload.

Syntax

show reload

Modes

User EXEC mode

Examples

The following example shows that there is no system reload scheduled.

```
device> show reload
No scheduled reload
```

show reserved-vlan-map

Displays the assigned VLAN IDs for reserved VLANs.

Syntax

show reserved-vlan-map

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

To view the assigned VLAN IDs for reserved VLANs 4091 and 4092, use the **show reserved-vlan-map** command. The reassigned VLAN IDs also display in the output of the **show running-config** and **show config** commands.

Command Output

The **show reserved-vlan-map** command displays the following information:

Output field	Description
Reserved Purpose	The reason the VLAN is reserved.
Default	The default VLAN ID of the reserved VLAN.
Re-assign	The VLAN ID to which the reserved VLAN was reassigned.
Current	The current VLAN ID for the reserved VLAN.

NOTE
If you reassign a reserved VLAN without saving the configuration and reloading the software, the reassigned VLAN ID will display in the Re-assign column. However, the previously configured or default VLAN ID will display in the Current column until the configuration is saved and the device reloaded.

Examples

The following is a sample output of the **show reserved-vlan-map** command.

```
device> show reserved-vlan-map
Reserved Purpose     Default   Re-assign   Current
 CPU VLAN              4091       10         33
 All Ports VLAN        4092       10         33
```

show restconf config

Displays information about RESTCONF configurations.

Syntax

show restconf config

Modes

User EXEC mode

Command Output

The **show ip ospf interface** command displays the following information:

Output field	Description
restconf	RESTCONF configuration status.
protocol-debug-level	RESTCONF protocol debug level.
platform-debug-level	RESTCONF platform debug level.
config-sync	Configuration sync status.
config-sync-timeout	RESTConf periodic Configuration sync timeout interval.

Examples

The following example shows information about RESTCONF configurations.

```
device> show restconf config

RESTConf Feature Configuration
restconf                enable
protocol-debug-level    error
platform-debug-level    info
config-sync             enabled
config-sync-timeout     5 mins
```

History

Release version	Command history
09.0.00	This command was introduced.

show restconf event-counters

Displays information about RESTCONF event counters.

Syntax

show restconf event-counters

Modes

User EXEC mode

Command Output

The **show ip event-counters** command displays the following information:

Output field	Description
SCP Event	Number of SCP event.
Processed	Processed status.
YANG Map	YANG Map Number.
Queued	Queued events.
Duplicate	Duplicate event.
Unknown Oper	Unknown Operation.

Examples

The following example shows information about RESTCONF event counters.

```
device> show restconf event-counters

SCP Event      |Processed      |YANG Map       |Queued         |Duplicate      |Unknown Oper   |
153            |1              |1              |1              |0              |0              |
154            |0              |2              |0              |0              |0              |
155            |0              |3              |0              |0              |0              |
131            |2              |4              |1              |1              |0              |
143            |1              |5              |1              |0              |0              |
144            |0              |6              |0              |0              |0              |
161            |0              |9              |0              |0              |0              |
               |               |10             |0              |0              |0              |
140            |0              |8              |0              |0              |0              |
               |               |7              |0              |0              |0              |
141            |0              |11             |0              |0              |0              |
145            |0              |12             |0              |0              |0              |
146            |0              |13             |0              |0              |0              |
147            |0              |14             |0              |0              |0              |
148            |0              |15             |0              |0              |0              |
149            |0              |16             |0              |0              |0              |
156            |0              |17             |0              |0              |0              |
157            |0              |18             |0              |0              |0              |
158            |0              |19             |0              |0              |0              |
150            |0              |20             |0              |0              |0              |
8              |0              |21             |0              |0              |0              |
81             |0              |22             |0              |0              |0              |
65535          |0              |0              |0              |0              |0              |
```

History

Release version	Command history
09.0.00	This command was introduced.

show restconf event-map

Displays RESTCONF event mapping information.

Syntax

show restconf event-map

Modes

User EXEC mode

Command Output

The **show ip event-map** command displays the following information:

Output field	Description
SCP Event	Number of SCP event.
YANG ID	YANG ID.
YANG Mapping	YANG mapping path

Examples

The following example shows RESTCONF event mapping information.

```
device> show restconf event-map

SCP Event YANG ID   YANG Mapping
153       1         /system/aaa/authentication/users
154       2         /system/aaa/server-groups/server-group/tacacs-group/servers/server/tacacs
155       3         /system/aaa/authentication/config/authentication-method
131       4         /system/dns
143       5         /lldp/config
144       6         /lldp/interfaces
161       9         /interfaces/interface/#wc/aggregation
          10        /interfaces/interface/#wc/ethernet/config/aggregate-id
140       8         /interfaces/interface/#wc/ethernet/switched-vlan/config
          7         /network-instances/network-instance/#wc/vlans
141       11        /openconfig-spanning-tree:stp
145       12        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc
146       13        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc/ospfv2/areas
147       14        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc/ospfv2/areas/
area/#wc/interfaces
148       15        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc/ospfv2/areas/
area/#wc/interfaces
149       16        /network-instances/network-instance/#wc/protocols/protocol/STATIC/#wc/static-routes
156       17        /system/aaa/server-groups/server-group/radius-group/servers/server/radius
157       18        /system/aaa/authentication/icx-openconfig-aaa-aug:dot1x
158       19        /system/aaa/authorization/icx-openconfig-aaa-aug:coa/openconfig-
interfaces:interfaces
150       20        /openconfig-acl:acl
8         21        (null)
81        22        (null)
```

History

Release version	Command history
09.0.00	This command was introduced.

show restconf running-config

Displays RESTCONF running configuration information.

Syntax

show restconf running-config

Modes

User EXEC mode

Examples

The following example shows RESTCONF running configuration information.

```
device> show restconf running-config

Get RC Req : File /var/log/restconf/ui_config.xml, XPath /, Def 0 State 0

RESTConf Running Configuration XML File : /var/log/restconf/ui_config.xml
<?xml version="1.0" encoding="UTF-8"?>
<config xmlns="http://yumaworks.com/ns/yumaworks-db-api">
  <interfaces xmlns="http://openconfig.net/yang/interfaces">
    <interface>
      <config>
        <description/>
        <enabled>true</enabled>
        <name>ethernet 1/1/1</name>
        <type>ianaift:ethernetCsmacd</type>
      </config>
      <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <config>
          <auto-negotiate>false</auto-negotiate>
          <duplex-mode>FULL</duplex-mode>
          <ethernet-clock xmlns="http://commscope.com/ns/yang/icx/icx-openconfig-if-ethernet-aug">none</
ethernet-clock>
          <port-speed>oc-eth:SPEED_1GB</port-speed>
        </config>
      </ethernet>
      <name>ethernet 1/1/1</name>
    </interface>
…
  </interfaces>
  <lldp xmlns="http://openconfig.net/yang/lldp">
    <config>
      <enabled>true</enabled>
    </config>
    <interfaces>
      <interface>
        <config>
          <enabled>true</enabled>
          <name>ethernet 1/1/1</name>
        </config>
        <name>ethernet 1/1/1</name>
      </interface>
...
```

History

Release version	Command history
09.0.00	This command was introduced.

show restconf status

Displays the RESTCONF status.

Syntax

show restconf status

Modes

User EXEC mode

Command Output

The **show ip status** command displays the following information:

Output field	Description
SCP Event	Number of SCP event.
YANG ID	YANG ID.
YANG Mapping	YANG mapping path

Examples

The following example shows information about RESTCONF event mapping.

```
device> show restconf status

SCP Event YANG ID   YANG Mapping
153       1         /system/aaa/authentication/users
154       2         /system/aaa/server-groups/server-group/tacacs-group/servers/server/tacacs
155       3         /system/aaa/authentication/config/authentication-method
131       4         /system/dns
143       5         /lldp/config
144       6         /lldp/interfaces
161       9         /interfaces/interface/#wc/aggregation
          10        /interfaces/interface/#wc/ethernet/config/aggregate-id
140       8         /interfaces/interface/#wc/ethernet/switched-vlan/config
          7         /network-instances/network-instance/#wc/vlans
141       11        /openconfig-spanning-tree:stp
145       12        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc
146       13        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc/ospfv2/areas
147       14        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc/ospfv2/areas/
area/#wc/interfaces
148       15        /network-instances/network-instance/#wc/protocols/protocol/OSPF/#wc/ospfv2/areas/
area/#wc/interfaces
149       16        /network-instances/network-instance/#wc/protocols/protocol/STATIC/#wc/static-routes
156       17        /system/aaa/server-groups/server-group/radius-group/servers/server/radius
157       18        /system/aaa/authentication/icx-openconfig-aaa-aug:dot1x
158       19        /system/aaa/authorization/icx-openconfig-aaa-aug:coa/openconfig-
interfaces:interfaces
150       20        /openconfig-acl:acl
8         21        (null)
81        22        (null)
```

History

Release version	Command history
09.0.00	This command was introduced.

show rmon

Displays the Remote Monitoring (RMON) agent status and information about RMON alarms, events, history, logs, and statistics on the interface.

Syntax

show rmon { **alarm** [*alarm-number*] | **event** [*event-number*] | **history** [*history-index*] | **logs** [*event-index*] | **statistics** [*statistics-number* | **ethernet** *stackid/slot/port* | **management** *interface-number*] }

Parameters

alarm

Displays the RMON alarm table.

[*alarm-number*]

Specifies the alarm index identification number to display.

event

Displays the RMON event table.

[*event-number*]

Specifies the event index identification number to display.

history

Displays the RMON history control table.

[*history-index*]

Specifies the history index identification number of the history entry to display.

logs

Displays the RMON logging table.

[*event-index*]

Specifies the event index identification number. Valid decimal values range from 1 through 65535.

statistics

Displays the RMON Ethernet statistics as well as the statistics group that collects statistics on promiscuous traffic across an interface and total traffic into and out of the agent interface.

[*statistics-number*]

Specifies the statistics index identification number of the statistics entry.

[**ethernet** *stackid/slot/port*]

Specifies the ethernet interface.

[**management** *interface-number*]

Specifies the management port number, typically, **management 1**.

Modes

Privileged EXEC mode

Global configuration mode

Command Output

The **show rmon** commands display the following information:

Output field	Description
Rising threshold	The sampling value limit beyond which the rising alarm is triggered.
Falling threshold	The sampling value limit beyond which the falling alarm is triggered.
Octets	The total number of octets of data received on the network. This number includes octets in bad packets. This number does not include framing bits but does include Frame Check Sequence (FCS) octets.
Drop events	Indicates an overrun at the port. The port logic could not receive the traffic at full line rate and had to drop some packets as a result. The counter indicates the total number of events in which packets were dropped by the RMON probe due to lack of resources. This number is not necessarily the number of packets dropped but is the number of times an overrun condition has been detected.
Packets	The total number of packets received. This number includes bad packets, broadcast packets, and multicast packets.
Broadcast pkts	The total number of good packets received that were directed to the broadcast address. This number does not include multicast packets.
Multicast pkts	The total number of good packets received that were directed to a multicast address. This number does not include packets directed to the broadcast address.
CRC align errors	The total number of packets received that were from 64 - 1518 octets long but had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error). The packet length does not include framing bits but does include FCS octets.
Undersize pkts	The total number of packets received that were less than 64 octets long and were otherwise well formed. This number does not include framing bits but does include FCS octets.
Fragments	The total number of packets received that were less than 64 octets long and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error). It is normal for this counter to increment, since it counts both runts (which are normal occurrences due to collisions) and noise hits. This number does not include framing bits but does include FCS octets.
Oversize packets	The total number of packets received that were longer than 1518 octets and were otherwise well formed. This number does not include framing bits but does include FCS octets. **NOTE** 48GC modules do not support count information on oversized packets and report 0.
Jabbers	The total number of packets received that were longer than 1518 octets and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error). **NOTE** This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition where any packet exceeds 20 ms. The allowed range to detect jabber is between 20 ms and 150 ms. This number does not include framing bits but does include FCS octets. **NOTE** 48GC modules do not support count information on jabbers and report 0.
Collisions	The best estimate of the total number of collisions on this Ethernet segment.
64 octet pkts	The total number of packets received that were 64 octets long. This number includes bad packets. This number does not include framing bits but does include FCS octets.
65 to 127 octet pkts	The total number of packets received that were 65 - 127 octets long. This number includes bad packets. This number does not include framing bits but does include FCS octets.

Output field	Description
128 to 255 octet pkts	The total number of packets received that were 128 - 255 octets long. This number includes bad packets. This number does not include framing bits but does include FCS octets.
256 to 511 octet pkts	The total number of packets received that were 256 - 511 octets long. This number includes bad packets. This number does not include framing bits but does include FCS octets.
512 to 1023 octet pkts	The total number of packets received that were 512 - 1023 octets long. This number includes bad packets. This number does not include framing bits but does include FCS octets.
1024 to 1518 octet pkts	The total number of packets received that were 1024 - 1518 octets long. This number includes bad packets. This number does not include framing bits but does include FCS octets.
Event Index	The event index identification number.
Log Index	The log index identification number.
Log Generated time	The time at which the log is generated.
Log Description	Indicates the type of alarm: whether it is a rising or falling alarm.

Examples

The following example shows the output of the **show rmon alarm** command.

```
device(config)# show rmon alarm
Alarm 1 is active, owned by monitor
 Monitors etherStatsPkts.13 every 5 seconds
 Taking absolute samples, last value was 675
 Rising threshold is 100, assigned to event 1
 Falling threshold is 0, assigned to event 1
 On startup enable rising or falling alarm

Alarm 2 is active, owned by monitor
 Monitors etherStatsPkts.2 every 5 seconds
 Taking absolute samples, last value was 414
 Rising threshold is 100, assigned to event 3
 Falling threshold is 0, assigned to event 3
 On startup enable rising or falling alarm
```

The following example shows the output of the **show rmon event** command.

```
device(config)# show rmon event
Event 1 is active, owned by monitor
 Description is testing
 Event firing causes log, community
 Batch ID 0, argument <none>
 Last fired at system up time 3 minutes 52 seconds

Event 2 is active, owned by monitor
 Description is logging
 Event firing causes log and trap, community public
 Batch ID 0, argument <none>
 Last fired at system up time 8 minutes 12 seconds
```

The following example shows the output of the **show rmon history***history-index* command.

```
device(config)# show rmon history 1
History 1 is active, owned by monitor
 Monitors interface mgmt1 (ifIndex 25) every 30 seconds
 25 buckets were granted to store statistics
```

The following example shows the output of the **show rmon logs** command.

```
device(config)# show rmon logs
 Event Index = 1
     Log Index = 1
     Log Generated time = 00:03:52 (23200)
     Log Description  = rising alarm

 Event Index = 2
     Log Index = 1
     Log Generated time = 00:08:12 (49200)
     Log Description  = rising alarm

 Event Index = 3
     Log Index = 1
     Log Generated time = 00:05:12 (31200)
     Log Description  = rising alarm

 Event Index = 4
     Log Index = 1
     Log Generated time = 00:01:32 (9200)
     Log Description  = falling alarm

     Log Index = 2
     Log Generated time = 00:02:52 (17200)
     Log Description  = rising alarm
```

The following example shows the output of the **show rmon logs***event-index* command.

```
device(config)# show rmon logs 2
Event Index = 2
     Log Index = 1
     Log Generated time = 00:08:12 (49200)
     Log Description  = rising alarm
```

The following is sample output from the **show rmon statistics** command.

```
device# show rmon statistics

Ethernet statistics 1 is active, owned by monitor
 Interface 1/1/1 (ifIndex 1) counters
           Octets                    0
      Drop events                    0             Packets                    0
   Broadcast pkts                    0      Multicast pkts                    0
 CRC align errors                    0      Undersize pkts                    0
    Oversize pkts                    0           Fragments                    0
          Jabbers                    0          Collisions                    0

 Packet size counters
              64                    0           65 to 127                    0
       128 to 255                   0          256 to 511                    0
      512 to 1023                   0        1024 to 10200                   0

Ethernet statistics 2 is active, owned by monitor
 Interface 1/1/2 (ifIndex 2) counters
           Octets                    0
      Drop events                    0             Packets                    0
   Broadcast pkts                    0      Multicast pkts                    0
 CRC align errors                    0      Undersize pkts                    0
    Oversize pkts                    0           Fragments                    0
          Jabbers                    0          Collisions                    0

 Packet size counters
              64                    0           65 to 127                    0
       128 to 255                   0          256 to 511                    0
      512 to 1023                   0        1024 to 10200                   0
```

The following example shows the output of the **show rmon statistics** *statistics-number* command.

```
device(config)# show rmon statistics 1
Ethernet statistics 1 is active, owned by monitor
 Interface 1/1/1 (ifIndex 1) counters
          Octets                    0
      Drop events                   0             Packets                   0
   Broadcast pkts                   0      Multicast pkts                   0
 CRC align errors                   0      Undersize pkts                   0
    Oversize pkts                   0           Fragments                   0
         Jabbers                    0          Collisions                   0

 Packet size counters
              64                    0           65 to 127                   0
       128 to 255                   0          256 to 511                   0
      512 to 1023                   0        1024 to 1518                   0
```

The following example shows the RMON statistics for Ethernet interface 1/2/1.

```
device(config)# show rmon statistics ethernet 1/2/1
Ethernet statistics 65 is active, owned by monitor
 Interface 1/2/1 (ifIndex 65) counters
          Octets          30170677670
      Drop events                   0             Packets             72281139
   Broadcast pkts                   0      Multicast pkts             66309417
 CRC align errors                   0      Undersize pkts                    0
    Oversize pkts                   0           Fragments                    0
         Jabbers                    0          Collisions                    0

 Packet size counters
              64                    0           65 to 127             10703415
       128 to 255            19353559          256 to 511             18658554
      512 to 1023            17980963        1024 to 1518              5584648
```

History

Release version	Command history
08.0.20	The **logs** keyword was introduced.
09.0.00	The command set was deprecated.
09.0.10c	Support for the command set was restored.

show rspan-vlan

Displays information about Remote Switched Port Analyzer (RSPAN) VLANs.

Syntax

show rspan-vlan

Modes

User EXEC mode

Examples

The following example is sample output for the **show rspan-vlan** command.

```
device# show rspan-vlan

RSPAN details:
VLAN: 20
RSPAN destination port: ethe 1/1/27
RSPAN ingress monitor source port(s): ethe 1/1/43
RSPAN egress monitor source port(s): ethe 1/1/43
```

History

Release version	Command history
08.0.80	This command was introduced.

show run mvrp

Displays the Multiple VLAN Registration Protocol (MVRP) running configuration.

Syntax

show run mvrp

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example displays the MVRP running configuration.

```
device(config)# show run mvrp
!
mvrp enable
!
interface ethernet 1/1/25
 mvrp enable
```

History

Release version	Command history
08.0.90	This command was introduced.

show running-config

Retrieves current running configuration from the system.

Syntax

show running-config [**interface** [**ethernet** *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* |**ethernet** *unit/slot/port*] [**lag** *lag-id***to** *lag-id* | **lag** *lag-id*]...] | **loopback** *loopback-port-num* | **management** *mgmt-port-num* | **tunnel** *tunnel-port-num* | **ve** *ve-port-num*]]

show running-config [**interface** [**lag** *lag-d* [**to** *lag-id* | [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*] [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*]...]

show running-config [**vlan** *vlan-id*]

show running-config [**vrf**]

Parameters

interface
Displays the running configuration for the specified interface type.

ethernet *unit/slot/port*
Displays the running configuration on the specified Ethernet interface.

to *unit/slot/port*
Specifies the range of the Ethernet interface for which to display the running configuration.

lag *lag-id*
Specifies the LAG virtual interface.

to *lag-id*
Specifies a range of LAG virtual interface IDs.

loopback *loopback-port-num*
Displays the running configuration information for the specified loopback interface.

management *mgmt-port-num*
Displays the running configuration information for the specified management interface.

tunnel *tunnel-port-num*
Displays the running configuration information for the specified tunnel interface.

ve *ve-port-num*
Displays the running configuration information for the specified VE port.

vlan *vlan-id*
Displays the running-configuration for the specified VLAN.

vrf
Displays the VRF-Lite running configuration.

Modes

User EXEC mode

Usage Guidelines

Use this command to display the configuration that is currently active on the local switch but which is not saved persistently.

Examples

The following example displays sample output of the **show running-config** command when the **vlan** keyword is used.

```
device(config)# show running-config vlan 100
vlan 502 by port
 tagged lag 1 ethe 1/2/5
 router-interface ve 502
```

The following example of the **show running-config** command displays information on configured LAGs in sequential order by LAG ID.

```
device(config)# show running-config
Current configuration:
!
!
lag lag1 dynamic id 1
!
lag lag2 dynamic id 2
!
lag lag3 dynamic id 3
!
lag lag14 dynamic id 14
!
lag lag25 dynamic id 25
!
lag lag100 dynamic id 100
!
lag dyn-MgM-MCT dynamic id 112
 ports ethe 1/2/1 to 1/2/2 ethe 1/2/5 to 1/2/6
!
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options. This command was modified to include information about dynamically obtained DHCP options.
08.0.92	This command was modified to display LAG information ordered sequentially by LAG ID, rather than alphabetically by name.
08.0.95	The command was modified so that information is displayed for router advertisement (RA) route information configurations.
09.0.00	This command was modified so that information is displayed for RESTCONF configurations.

show running-config access-list

Displays information about configured and active ACLs.

Syntax

show running-config access-list { **ip** | **ipv6** | **mac** }

Parameters

ip

Displays IPv4 ACLs.

ipv6

Displays IPv6 ACLs.

mac

Displays MAC ACLs.

Modes

All modes

Usage Guidelines

Examples

The following example displays IPv4 ACLs present in the running-configuration.

```
device# show running-config access-list ip
ip access-list extended acl1
sequence 10 permit ip host 192.168.10.11 any
sequence 20 deny ip host 192.168.10.12 any
sequence 30 deny udp any any log
sequence 40 permit tcp any any mirror
!
```

History

Release version	Command history
08.0.95	This command was introduced.

show running-config interface cpu active

Displays information about the configuration of the CPU interface on the active unit.

Syntax

show running-config interface cpu active

Modes

All modes

Usage Guidelines

The active unit can be either the active controller in a stack or a standalone unit.

Examples

The following example shows that one IPv4 ACL is applied to incoming traffic on the CPU.

```
device# show running-config interface cpu active
interface cpu active
ip access-group cpu-ipv4 in
```

History

Release version	Command history
09.0.00	This command was introduced.

show running-config interface ethernet

Displays the status of a specific Ethernet interface.

Syntax

show running-config interface ethernet *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]

Parameters

unit / slot / port

Stack ID number, slot number, and port number for an existing Ethernet interface.

to *unit/slot/port*

Specifies a range of Ethernet interfaces.

lag *lag-id*

Specifies the LAG virtual interface.

to *lag-id*

Specifies a range of LAG virtual interface IDs.

Modes

Privileged EXEC mode

Examples

This example displays the running configuration for an Ethernet interface including the configured bandwidth.

```
device# show running-config interface ethernet 1/1/9
interface ethernet 1/1/9
 bandwidth 2000
 ip address 10.1.1.5 10.255.255.0
 ip pim
 ip ospf area 0
 ipv6 address 201::1/64
 ipv6 ospf area 0
 ipv6 pim-sparse
 ipv6 pim dr-priority 50
 ipv6 pim border
 ipv6 mld version 2
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.
08.0.61	This command was modified to add **lag** *lag-id* options.

show running-config interface tunnel

Displays the status of a specific tunnel interface.

Syntax

show running-config interface tunnel { *tunnel-number* }

Parameters

tunnel-number

Specifies the tunnel number.

Modes

Privileged EXEC mode

Examples

This example displays the running configuration for a tunnel interface, including the configured bandwidth.

```
device# show running-config interface tunnel 2

interface tunnel 2
 tunnel mode gre ip
 tunnel source 10.0.0.1
 tunnel destination 10.10.0.1
 ip address 10.0.0.1/24
 bandwidth 2000
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.

show running-config interface ve

Displays the status of a specific Virtual Ethernet (VE) interface.

Syntax

show running-config interface ve { *vlan_id* }

Parameters

vlan_id

Specifies the configured corresponding VLAN interface.

Modes

Privileged EXEC mode

Examples

This example displays the running configuration for a VE interface, including the configured bandwidth.

```
device# show running-config interface ve 20
interface ve 20
 ip address 10.21.21.22 10.255.255.0
 ip pim-sparse
 ip ospf area 0
 bandwidth 2000
 ipv6 address 2000::2/64
 ipv6 ospf area 0
```

History

Release version	Command history
08.0.30	This command was modified to include configured bandwidth status.

show running-config vlan

Displays information about all VLANs or a specified VLAN.

Syntax

show running-config vlan[*vlan-id*]

Parameters

vlan-id

Specifies the VLAN ID.

Modes

User EXEC mode

Examples

The following example is sample output for the **show running-config vlan** command.

```
device# show running-config vlan

vlan1 name DEFAULT-VLAN by port
spanning-tree802-1w
!
rspan-vlan 20
tagged ethe 1/1/27 ethe 1/1/45
rspan destination ethe 1/1/27
rspan source monitor-in ethe 1/1/43
rspan source monitor-out ethe 1/1/43
!
vlan30 by port
tagged ethe 1/1/43
!
!
```

The following example shows output for a specific VLAN.

```
device(config-vlan-300-webauth)# show running-config vlan 300
vlan 300 by port
tagged ethe 3/1/48 lag 1
untagged ethe 1/1/23
router-interface ve 300
webauth
captive-portal profile captive_profile1
reauth-time 60
white-list 10 www.commscope.com
white-list 30 192.168.0.1 0.0.0.255
white-list 35 192.168.12.2 0.0.0.255
white-list 60 10.177.17.67 0.0.0.127
auth-mode passcode length 16
auth-mode passcode static 1234
auth-mode captive-portal
trust-port lag 1
!
```

History

Release version	Command history
08.0.80	This command was modified to include information about configured Remote Switched Port Analyzer (RSPAN) VLANs.
09.0.00	This command was modified to include informaiton about configured white-lists in a specific VLAN.

show running ikev2

Displays current Internet Key Exchange version 2 (IKEv2) configuration information.

Syntax

show running ikev2

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

Use this command to display the IKEv2 configuration that is currently active on the device.

Examples

The following example displays the current IKEv2 configuration.

```
device# show running ikev2
!
ikev2 proposal ikev2_propA
!
ikev2 auth-proposal ikev2_auth_propA
pre-shared-key 2 $MlVzZCFAblp8OA==
!
ikev2 policy ikev2_policyA
proposal ikev2_propA
match address-local 10.100.100.1 255.255.255.255
!
ikev2 profile ikev2_profA
authentication ikev2_auth_propA
 local-identifier address 10.1.1.1
remote-identifier address 10.4.4.4
match-identity local address 10.1.1.1
match-identity remote address 10.4.4.4
!
!
ipsec proposal ipsec_propA
!
ipsec profile ipsec_profA
proposal ipsec_propA
ike-profile ikev2_profA
!
```

History

Release version	Command history
08.0.50	This command was introduced.

show running interface

Displays information about the interface.

Syntax

show running interface [**ethernet** *stack/slot/port* [**to ethernet** *stack/slot/port*] | **loopback** *loopback-number* | **management** *por-id* | **tunnel** *tunnel-id* | **ve** *ve-number*]

Parameters

ethernet *stack/slot/port*

Specifies the configuration on a physical interface. On standalone devices specify the interface ID in the format slot/port-id; on stacked devices you must also specify the stack ID, in the format stack-id/slot/port-id.

to

Specifies information for a range of physical interfaces.

loopback *loopback-number*

Specifies information for a loopback interface.

management *port-id*

Specifiesinformation for a management port.

tunnel *tunnel-id*

Specifies information for a tunnel interface.

ve *ve-number*

Specifies information for a virtual interface.

Modes

Privileged EXEC mode

Examples

The following example displays output from the **show running interface** command, showing that ACLs 10 and f10 are applied to interface 1/1/9 to control neighbor access.

```
Device#show running interface ethernet 1/1/9
interface ethernet 1/1/9
 ip address 15.1.1.5 255.255.255.0
 ip pim-sparse
 ip pim neighbor-filter 10
 ip ospf area 0
 ipv6 address 201::1/64
 ipv6 ospf area 0
 ipv6 pim-sparse
 ipv6 pim neighbor-filter f10
```

History

Release version	Command history
08.0.20a	This command was modified to display neighbor filter information.

show scheduler-profile

Displays the user-configurable scheduler profile configuration.

Syntax

show scheduler-profile { *user-profile-name* | **all** }

Parameters

user-profile-name

Displays the configured scheduler profile for the specified profile.

all

Displays all scheduler profiles in the runtime configuration for the system.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following example is sample output from the **show scheduler-profile all** command.

```
device(config)# show scheduler-profile all

User Profile: profile1  Scheduling Option: Mixed-SP-WRR
Per Queue details:    Bandwidth%
Traffic Class 0       15%
Traffic Class 1       15%
Traffic Class 2       15%
Traffic Class 3       15%
Traffic Class 4       15%
Traffic Class 5       25%
Traffic Class 6       sp
Traffic Class 7       sp
User Profile: profile2  Scheduling Option: Weighted round-robin
Per Queue details:    Bandwidth%
Traffic Class 0       3%
Traffic Class 1       3%
Traffic Class 2       3%
Traffic Class 3       3%
Traffic Class 4       3%
Traffic Class 5       3%
Traffic Class 6       7%
Traffic Class 7       75%
```

show sflow

Displays the sFlow configuration and statistics.

Syntax

show sflow

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

You can display the rates that you configured for the default sampling rate, module rates, and all sFlow-enabled ports. You can view the agent IP address and several other details.

Command Output

The **show sflow** command displays the following information.

Output field	Description
sFlow version	The version of sFlow enabled on the device, which can be 2 or 5.
sFlow services	The feature state, which can be enabled or disabled.
sFlow agent IP address	The IP address that sFlow is using in the agent_address field of packets sent to the collectors.
Collector	The collector information. The following information is displayed for each collector: • IP address • UDP port If more than one collector is configured, the line above the collectors indicates how many have been configured.
Configured UDP source	The UDP source port used to send data to the collector.
Polling interval	The polling interval of the port counter.
Configured default sampling rate	The configured global sampling rate. If you change the global sampling rate, the value you enter is shown here. The actual rate calculated by the software based on the value you enter is listed on the next line, "Actual default sampling rate."
Actual default sampling rate	The actual default sampling rate.
The maximum sFlow sample size	The maximum size of a flow sample sent to the sFlow collector.
exporting cpu-traffic	Indicates whether the sFlow agent is configured to export data destined to the CPU (for example, Telnet sessions) to the sFlow collector: • enabled • disabled
exporting cpu-traffic sample rate	The sampling rate for CPU-directed data, which is the average ratio of the number of incoming packets on an sFlow-enabled port, to the number of flow samples taken from those packets.

Output field	Description
exporting system-info	Indicates whether the sFlow agent is configured to export information about CPU and memory usage to the sFlow collector: • enabled • disabled
exporting system-info polling interval	Specifies the interval, in seconds, at which sFlow data is sent to the sFlow collector.
UDP packets exported	The number of sFlow export packets the device has sent. **NOTE** Each UDP packet can contain multiple samples.
sFlow samples collected	The number of sampled packets that have been sent to the collectors.
sFlow ports	The ports on which you enabled sFlow.
Module Sampling Rates	The configured and actual sampling rates for each module. If a module does not have any sFlow-enabled ports, the rates are listed as 0.
Port Sampling Rates	The configured and actual sampling rates for each sFlow-enabled port. The subsampling factor indicates how many times the sampling rate of the port's module is multiplied to achieve the port's sampling rate. Because of the way in which the actual sampling rates are computed, the subsampling factors are always whole numbers.

Examples

The following is sample output from the **show sflow** command.

```
device# show sflow

sFlow version: 5
sFlow services are enabled.

sFlow agent IP address: 10.1.1.1
3 collector destinations configured:
Collector IP 10.2.2.2, UDP 6343
Collector IP 10.3.3.3, UDP 6343
Collector IP 10.4.4.4, UDP 6343
Configured UDP source port: 9999
Polling interval is 30 seconds.
Configured default sampling rate: 1 per 566 packe
Actual default sampling rate: 1 per 566 packets.
The maximum sFlow sample size: 1200.
Sample mode: All packets including dropped packet
exporting cpu-traffic is enabled.
exporting cpu-traffic sample rate: 18.
exporting system-info is enabled
exporting system-info polling interval: 30 second
22 UDP packets exported
0 sFlow flow samples collected.
sFlow ports: ethe 1/1/1 to 1/1/2
Module Sampling Rates
---------------------
U1:M1 configured rate=300, actual rate=300
Port Sampling Rates
-------------------
Port=1/1/1, configured rate=300, actual rate=300
Port=1/1/2, configured rate=400, actual rate=400
```

show snmp

Displays various SNMP statistics.

Syntax

show snmp [**engineid** | **group** | **server** | **user**]

Parameters

engineid

Displays local and remote SNMP engine IDs.

group

Displays SNMP groups.

server

Displays SNMP server status and trap information

user

Displays SNMPv3 users details.

Modes

User EXEC mode

Command Output

The **show snmp engineid** command displays the following information:

When the SNMP server is disabled, the following warning message is displayed: "SNMP is disabled. Please enable SNMP to run **show snmp** commands."

Output field	Description
Local SNMP Engine ID	The engine ID that identifies the source or destination of the packet.
Engine Boots	The number of times that the SNMP engine reinitialized itself with the same ID. If the engine ID is modified, the boot count is reset to 0.
Engine time	The current time with the SNMP agent.

The **show snmpgroup** command displays the following information:

Output field	Description
groupname	The SNMP group name configured using the **snmp-server group** command.
Security model	Indicates which version of SNMP is used for authentication. SNMP version 3 uses a User-Based Security model (RFC 2574) for authentication and privacy services. SNMP version 1 and version 2 use community strings to authenticate SNMP access to management modules. This method can still be used for authentication.

Output field	Description
Security level	• none - If the security model shows v1 or v2, then security level is blank. User names are not used to authenticate users; community strings are used instead. • noauthNoPriv - If the security model shows v3 and user authentication is by user name only. • authNoPriv - If the security model shows v3 and user authentication is by user name and the MD5 or SHA algorithm.

Examples

The following example displays output of the **show snmpengineid** command.

```
device# show snmp engineid
Local SNMP Engine ID: 800007c703748ef88315c0
Engine Boots: 24
Engine time: 1586246
```

The following example displays output of the **show snmpgroup** command.

```
device# show snmp group
groupname = 1n
security model = v3
security level = authNoPriv
ACL id = 1
readview = r
writeview = exit
notifyview = n

groupname = d3
security model = v3
security level = authNoPriv
ACL id = 3
readview = all
writeview = all
notifyview = all

groupname = d4
security model = v3
security level = authNoPriv
ACL id = 3
readview = <none>
writeview = <none>
notifyview = 3
```

The following example displays output of the **show snmpserver** command.

```
device# show snmp server
       Status: Enabled

      Contact: XYZ
     Location: CopyCenter

Max Ifindex per module: 64

Traps
                   Cold start: Enable
                      Link up: Enable
                    Link down: Enable
               Authentication: Enable
         Power supply failure: Enable
                  Fan failure: Enable
              Fan speed change: Enable
               Module inserted: Enable
                Module removed: Enable
Redundant module state change: Enable
          Temperature warning: Enable
                 STP new root: Enable
          STP topology change: Enable
             MAC notification: Enable
        MAC-AUTH notification: Enable
                         VSRP: Enable
                          MRP: Enable
                         UDLD: Enable
                          VRF: Enable
                    link-oam: Enable
                         cfm: Enable
                      nlp-phy: Enable

 Total Trap-Receiver Entries: 0
```

The following example displays output of the **show snmpuser** command.

```
device# show snmp user
username = bob
ACL id = 2
group = admin
security model = v3
group ACL id = 0
authtype = md5
authkey = 3aca18d90b8d172760e2dd2e8f59b7fe
privtype = des, privkey = 1088359afb3701730173a6332d406eec
engine ID= 800007c70300e052ab0000
```

History

Release version	Command history
08.0.90	This command was modified to display BGP BFD session information for neighbors.
08.0.92a	The output for this command was modified so that the MD5 password is not displayed in clear text when **enable password-display** is configured.
09.0.00	The output for the command was modified to include a warning message when the SNMP server is disabled.

show span

Displays the Spanning Tree Protocol (STP) information for the device.

Syntax

show span [*number* |**designated-protect** | **fast-uplink-span** | **pvst-mode** | **root-protect**]

show span [**detail** [*number* | **vlan** *vlan-id* [**ethernet** *stackid/slot/port* | **lag** *lag-id*]]]

show span [**vlan** *vlan-id* [**ethernet** *stackid/slot/port* | **fast-uplink-span** |**lag** *lag-id*]]

Parameters

number
Displays only the entries after the specified number.

designated-protect
Displays the designated forwarding state disabled.

fast-uplink-span
Displays the status of ports with Fast Uplink Span enabled.

pvst-mode
Displays STP information for the device Per VLAN Spanning Tree Plus (PVST+) compatibility configuration.

root-protect
Displays the STP root guard state.

detail
Displays the detailed STP information for a port.

vlan *vlan-id*
Displays the STP information for a VLAN.

ethernet *stackid/slot/port*
Displays STP information for an Ethernet port.

lag *lag-id*
Displays STP information for a LAG virtual interface.

Modes

User EXEC mode

Command Output

The **show span** command displays the following information:

Output field	Description
VLAN ID	The port-based VLAN that contains this spanning tree (instance of STP). VLAN 1 is the default VLAN. If you have not configured port-based VLANs on this device, all STP information is for VLAN 1.
Root ID	The ID assigned by STP to the root bridge for this spanning tree.

Output field	Description
Root Cost	The cumulative cost from this bridge to the root bridge. If this device is the root bridge, the root cost is 0.
Root Port	The port on this device that connects to the root bridge. If this device is the root bridge, the value is "Root" instead of a port number.
Priority Hex	This device or VLAN STP priority. The value is shown in hexadecimal format.
Max age sec	The number of seconds this device or VLAN waits for a configuration BPDU from the root bridge before deciding the root has become unavailable and performing a reconvergence.
Hello sec	The interval between each configuration BPDU sent by the root bridge.
Hold sec	The minimum number of seconds that must elapse between transmissions of consecutive Configuration BPDUs on a port.
Fwd dly sec	The number of seconds this device or VLAN waits following a topology change and consequent reconvergence.
Last Chang sec	The number of seconds since the last time a topology change occurred.
Chg cnt	The number of times the topology has changed since this device was reloaded.
Bridge Address	The STP address of this device or VLAN.
Port Num	The port number.
Priority Hex	The port STP priority, in hexadecimal format.
Path Cost	The port STP path cost.
State	The port STP state. The state can be one of the following: • BLOCKING: STP has blocked Layer 2 traffic on this port to prevent a loop. The device or VLAN can reach the root bridge using another port, the state of which is FORWARDING. When a port is in this state, the port does not transmit or receive user frames, but the port does continue to receive STP BPDUs. • DISABLED: The port is not participating in STP. This can occur when the port is disconnected or STP is disabled on the port. • FORWARDING: STP is allowing the port to send and receive frames. • LISTENING: STP is responding to a topology change and this port is listening for a BPDU from neighboring bridges in order to determine the new topology. No user frames are transmitted or received during this state. • LEARNING: The port has passed through the LISTENING state and will change to the FORWARDING state depending on the results of STP reconvergence. The port does not transmit or receive user frames during this state. However, the device can learn the MAC addresses of frames that the port receives during this state and make corresponding entries in the MAC table. • DESIGNATED INCONSISTENT: (Shows as DESI-INCONS in the output.) You can disallow the designated forwarding state on a port in STP 802.1D or 802.1W with the **spanning-tree designated-protect** command. If STP tries to put this port into the designated forwarding role, the device puts this port into a designated inconsistent STP state. This is effectively equivalent to the listening state in STP in which a port cannot transfer any user traffic. When STP no longer marks this port as a designated port, the device automatically removes the port from the designated inconsistent state.
Fwd Trans	The number of times STP has changed the state of this port between BLOCKING and FORWARDING.
Design Cost	The cost to the root bridge as advertised by the designated bridge that is connected to this port. If the designated bridge is the root bridge itself, the cost is 0. The identity of the designated bridge is shown in the Designated Bridge field.
Designated Root	The root bridge as recognized on this port. The value is the same as the root bridge ID listed in the Root ID field.
Designated Bridge	The designated bridge to which this port is connected. The designated bridge is the device that connects the network segment on the port to the root bridge.

The **show span detail** command displays the following information:

Output field	Description
Active Spanning Tree protocol	The VLAN that contains the listed ports and the active Spanning Tree Protocol. The STP type can be one of the following: • MULTIPLE SPANNNG TREE (MSTP) • GLOBAL SINGLE SPANNING TREE (SSTP)
Bridge identifier	The STP identity of this device.
Active global timers	The global STP timers that are currently active, and their current values. The following timers can be listed: • Hello: The interval between Hello packets. This timer applies only to the root bridge. • Topology Change (TC): The amount of time during which the topology change flag in Hello packets will be marked, indicating a topology change. This timer applies only to the root bridge. • Topology Change Notification (TCN): The interval between Topology Change Notification packets sent by a non-root bridge toward the root bridge. This timer applies only to non-root bridges.
Active Timers	The current values for the following timers, if active: • Message age: The number of seconds this port has been waiting for a Hello message from the root bridge. • Forward delay: The number of seconds that have passed since the last topology change and consequent reconvergence. • Hold time: The number of seconds that have elapsed since transmission of the last Configuration BPDU.
BPDUs Sent and Received	The number of BPDUs sent and received on this port since the software was reloaded.

Examples

The following example shows the STP information.

```
device# show span
VLAN 1 BPDU cam_index is 3 and the Master DMA Are(HEX)
STP instance owned by VLAN 1
Global STP (IEEE 802.1D) Parameters:
VLAN      Root              Root    Root    Prio    Max    He-    Ho-    Fwd     Last     Chg  Bridge
ID        ID                Cost    Port    rity    Age    llo    ld     dly     Chang    cnt  Address
                                            Hex     sec    sec    sec    sec     sec
1         800000e0804d4a00  0        Root    8000   20     2      1      15       689      1
00e0804d4a00
Port STP Parameters:
Port          Prio     Path     State        Fwd     Design    Designated        Designated
Num           rity     Cost                  Trans   Cost      Root              Bridge
              Hex
1             80       19       FORWARDING   1       0         800000e0804d4a00  800000e0804d4a00
2             80       0        DISABLED     0       0         0000000000000000  0000000000000000
3             80       0        DISABLED     0       0         0000000000000000  0000000000000000
4             80       0        DISABLED     0       0         0000000000000000  0000000000000000
5             80       19       FORWARDING   1       0         800000e0804d4a00  800000e0804d4a00
6             80       19       BLOCKING     0       0         800000e0804d4a00  800000e0804d4a00
7             80       0        DISABLED     0       0         0000000000000000  0000000000000000
<lines for remaining ports excluded for brevity>
```

The following example shows the detailed STP information.

```
device# show span detail
========================================================================
VLAN 1 - SPANNING TREE (IEEE 802.1D) ACTIVE
========================================================================
Bridge identifier    - 0x800000a0c9c002a0
Active global timers - Hello: 0
Topology change not set, Topology change detected not set, Topology change time 35
Number of topology changes: 113
Last topology change occured 46 second(s)  ago on lg40


Port 1/1/1 is FORWARDING
  Port - Path cost: 4, Priority: 128, Port Identifier:128.0, Root: 0x800000a0c9c002a0 Root Bridge
Priority:32768
  Designated - Bridge: 0x800000a0c9c002a0, Priority:32768, Interface: 0, Identifier:128.0, Path cost: 0
  Active Timers - Hold: 0
  BPDUs - Sent: 5968, Received: 0
Port 1/1/2 is DISABLED
Port 1/1/3 is DISABLED
Port 1/1/4 is FORWARDING
  Port - Path cost: 4, Priority: 128, Port Identifier:128.3101, Root: 0x800000a0c9c002a0 Root Bridge
Priority:32768
  Designated - Bridge: 0x800000a0c9c002a0, Priority:32768, Interface: 3101, Identifier:128.3101, Path
cost: 0
  Active Timers - Hold: 0
  BPDUs - Sent: 5978, Received: 52
```

The following example displays STP information for an individual port in a specified VLAN.

```
device# show span detail vlan 1 ethernet 1/1/1
========================================================================
VLAN 1 - SPANNING TREE (IEEE 802.1D) ACTIVE
========================================================================
Bridge identifier    - 0x800000a0c9c002a0
Active global timers - Hello: 0
Topology change not set, Topology change detected not set, Topology change time 35
Number of topology changes: 113
Last topology change occured 6 minute(s) 57 second(s)  ago on lg40


Port 1/1/1 is FORWARDING
  Port - Path cost: 4, Priority: 128, Port Identifier:128.0, Root: 0x800000a0c9c002a0 Root Bridge
Priority:32768
  Designated - Bridge: 0x800000a0c9c002a0, Priority:32768, Interface: 0, Identifier:128.0, Path cost: 0
  Active Timers - None
  BPDUs - Sent: 6152, Received: 0
```

The following example displays STP information in a VLAN.

```
device# show span vlan 100
STP instance owned by VLAN 100

Global STP (IEEE 802.1D) Parameters:

VLAN Root             Root Root      Prio Max He- Ho- Fwd Last    Chg Bridge
 ID   ID              Cost Port      rity Age llo ld  dly Chang   cnt Address

                                     Hex  sec sec sec sec sec
 100 8000cc4e24b46fcc 0    Root      8000 20  2   1   15  11      1   cc4e24b46fcc

Port STP Parameters:

Port      Prio Path  State       Fwd    Design  Designated       Designated
Num       rity Cost              Trans  Cost    Root             Bridge
          Hex
1/1/1     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

1/1/2     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc
1/1/3     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

1/1/4     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

1/1/5     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

1/1/6     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

1/1/7     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

1/1/8     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

lg1       80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc

lg256     80   4     FORWARDING  1      0       8000cc4e24b46fcc 8000cc4e24b46fcc
```

The following example shows the port path costs after the 802.1D 2004 path cost method is globally configured. The Ethernet 1/1/5 and 1/1/6 port speeds are 1 Gbps.

```
device# show span vlan 100

STP instance owned by VLAN 100

Global STP (IEEE 802.1D) Parameters:

VLAN Root             Root Root      Prio Max He- Ho- Fwd Last    Chg Bridge
 ID   ID              Cost Port      rity Age llo ld  dly Chang   cnt Address
                                     Hex  sec sec sec sec sec
 100 8000cc4e246eb200 0    Root      8000 20  2   1   15  12739   2   cc4e246eb200

Port STP Parameters:

Port      Prio Path      State       Fwd    Design  Designated       Designated
Num       rity Cost                  Trans  Cost    Root             Bridge
          Hex
1/1/5     80   20000     FORWARDING  1      0       8000cc4e246eb200 8000cc4e246eb200
1/1/6     80   20000     FORWARDING  1      0       8000cc4e246eb200 8000cc4e246eb200
```

History

Release version	Command history
08.0.61	This command was modified to add the **lag** *lag-id* parameter.
08.0.70	This command was modified to display path cost values from the IEEE 802.1D 2004 standards.
10.0.00	This command was modified to display more topology information details.

show span designated-protect

Displays a list of all ports that are not allowed to go into the designated forwarding state.

Syntax

show span designated-protect

Modes

User EXEC mode

Examples

The following example indicates that the designated forwarding state is disallowed for interfaces 2/1/7, 2/1/19, and 2/2/3.

```
device(config)# show span designated-protect
Designated Protection Enabled on:
Ports: (U2/M1)    7 19
Ports: (U2/M2)    3
```

History

Release version	Command history
07.0.30g	This command was introduced.

show stack

Displays information about the units in a stack and a representation of the stack topology.

Syntax

show stack*num*

Parameters

num

Displays information for the specified stack unit ID.

Modes

User EXEC mode

Command Output

The **show stack** command displays the following information:

Output field	Description
ID	Specifies the identification number of the stack unit. Each unit in the stack has a unique ID number.
Type	Specifies the type (model) of the stack unit.
Role	Specifies the role of the stack unit. The roles are controller, standby, or member.
Mac Address	Specifies the MAC address of the stack unit. The roles are controller, standby, or member.
Pri	Specifies the priority value assigned to the stack unit. The default value is 128.
State	Specifies whether the stack unit is local or remote. A unit with a State value of Local is the active controller. Units with a State value of Remote are either standby units or member units.
Comment	Indicates if the stack unit is ready (available).
Role history	Tracks up to six role changes per stack unit. The initial state is always displayed. Overflow is indicated by ellipses (...). Standby to member role changes are not displayed. Role history also does not display the transition after bootup of a non-active controller unit from member to standby.

Examples

The following two examples show information for an ICX 7650 stack that includes rear-module operating mode.

```
ICX7650-48ZP# show stack
T=5d19h28m49.5: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX7650-48ZP  active  609c.9f52.2c96 128 local   Ready
2  S ICX7650-48ZP  standby 609c.9f52.2b22  10 remote  Ready

    active       standby
     +---+        +---+
  3/1| 1 |3/3==3/3| 2 |3/1
     +---+        +---+
Standby u2 - protocols ready, can failover
Current stack management MAC is 609c.9f52.2c96
Stack ports are operating at 40G.
```

```
ICX7650-48ZP# show stack
T=5d19h28m49.5: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX7650-48ZP  active  609c.9f52.2c96 128 local   Ready
2  S ICX7650-48ZP  standby 609c.9f52.2b22  10 remote  Ready

    active       standby
     +---+        +---+
  3/1| 1 |3/2-2/3 | 2 |3/1
     +---+        +---+
Standby u2 - protocols ready, can failover
Current stack management MAC is 609c.9f52.2c96
Stack ports are operating at 100G.
```

History

Release version	Command history
08.0.61	This command was modified to include role history transitions for all stack units.
08.0.70	This command was modified to include operating mode information for ICX 7650 stacks.

show stack connection

Displays a representation of stack topology and a detailed connection report that contains information on connection errors or hardware failures.

Syntax

show stack connection

Modes

Privileged EXEC mode

Examples

The following example displays a representation of a ring topology that has seven stack units and details on each of the trunk link connections.

```
device# show stack connection
Probing the topology. Please wait ...
device#
    active
    +---+        +---+        +---+        +---+        +---+        +---+
=2/1| 4 |2/6==2/6| 3 |2/1==2/1| 2 |2/6==2/6| 1 |2/1==2/1| 7 |2/6==2/6| 6 |2/1=
|   +---+        +---+        +---+        +---+        +---+        +---+   |
|                                                                             |
|                                                                      standby  |
|                                                                       +---+   |
-------------------------------------------------------------------------2/1| 5 |2/6=
                                                                        +---+

trunk probe results: 7 links
Link 1: u7 -- u1, num=5
1: 1/2/1 (T0) <---> 7/2/1 (T0)
2: 1/2/2 (T0) <---> 7/2/2 (T0)
3: 1/2/3 (T0) <---> 7/2/3 (T0)
4: 1/2/4 (T0) <---> 7/2/4 (T0)
5: 1/2/5 (T0) <---> 7/2/5 (T0)
Link 2: u2 -- u1, num=5
1: 1/2/6 (T1) <---> 2/2/6 (T1)
2: 1/2/7 (T1) <---> 2/2/7 (T1)
3: 1/2/8 (T1) <---> 2/2/8 (T1)
4: 1/2/9 (T1) <---> 2/2/9 (T1)
5: 1/2/10(T1) <---> 2/2/10(T1)
Link 3: u3 -- u2, num=5
1: 2/2/1 (T0) <---> 3/2/1 (T0)
2: 2/2/2 (T0) <---> 3/2/2 (T0)
3: 2/2/3 (T0) <---> 3/2/3 (T0)
4: 2/2/4 (T0) <---> 3/2/4 (T0)
5: 2/2/5 (T0) <---> 3/2/5 (T0)
Link 4: u4 -- u3, num=5
1: 3/2/6 (T1) <---> 4/2/6 (T1)
2: 3/2/7 (T1) <---> 4/2/7 (T1)
3: 3/2/8 (T1) <---> 4/2/8 (T1)

4: 3/2/9 (T1) <---> 4/2/9 (T1)
5: 3/2/10(T1) <---> 4/2/10(T1)
Link 5: u5 -- u4, num=5
1: 4/2/1 (T0) <---> 5/2/1 (T0)
2: 4/2/2 (T0) <---> 5/2/2 (T0)
3: 4/2/3 (T0) <---> 5/2/3 (T0)
4: 4/2/4 (T0) <---> 5/2/4 (T0)
5: 4/2/5 (T0) <---> 5/2/5 (T0)
Link 6: u6 -- u5, num=5
1: 5/2/6 (T1) <---> 6/2/1 (T0)
2: 5/2/7 (T1) <---> 6/2/2 (T0)
3: 5/2/8 (T1) <---> 6/2/3 (T0)
4: 5/2/9 (T1) <---> 6/2/4 (T0)
5: 5/2/10(T1) <---> 6/2/5 (T0)
Link 7: u7 -- u6, num=5
1: 6/2/6 (T1) <---> 7/2/6 (T1)
2: 6/2/7 (T1) <---> 7/2/7 (T1)
3: 6/2/8 (T1) <---> 7/2/8 (T1)
4: 6/2/9 (T1) <---> 7/2/9 (T1)
5: 6/2/10(T1) <---> 7/2/10(T1)
CPU to CPU packets are fine between 7 units.
```

show stack detail

Displays information on all units in the stack, including the role, MAC address, priority, status, and stack connections for each stack unit.

Syntax

show stack detail

Modes

Privileged EXEC mode

Command Output

The **show stack detail** command displays the following information:

Output field	Description
ID	Specifies the identification number of the stack unit. Each unit in the stack has a unique ID number.
Type	Specifies the type (model) of the stack unit.
Role	Specifies the role of the stack unit. The roles are controller, standby, or member.
Mac Address	Specifies the MAC address of the stack unit. The roles are controller, standby, or member.
Pri	Specifies the priority value assigned to the stack unit. The default value is 128.
State	Specifies whether the stack unit is local or remote. A unit with a State value of Local is the active controller. Units with a State value of Remote are either standby units or member units.
Comment	Indicates if the stack unit is ready (available).
Unit #	Specifies the number assigned to the stack unit. Each unit in the stack has a unique unit number. (This is the same as the ID of the stack unit.)
Stack Port Status	Indicates whether the stack port is connected or disconnected. A port with the up status of up is connected to the stack, and a ports with the status of down (dn) is not connected to the stack.
Neighbors	Indicates units in the stack that are connected together. Each unit in the stack is connected to at least one other stack unit.
System uptime	Indicates the amount of time that the stack unit has been running since the last reset. The System uptime is listed for each unit in the stack.

Examples

The following example displays information on a four-unit ICX 7850 stack.

```
ICX7850-48FS Router# show stack detail
T=1d23h19m9.4: alone: standalone, D: dynamic cfg, S: static
ID  Type         Role    Mac Address    Pri State  Comment
1 S ICX7850-48FS active  d4c1.9e18.83e1 128 local  Ready
2 D ICX7850-48F  standby d4c1.9e17.7daf   0 remote Ready
3 D ICX7850-48F  member  d4c1.9e17.8907   0 remote Ready
4 D ICX7850-48F  member  d4c1.9e17.7e07   0 remote Ready
    active       standby
    +---+         +---+        +---+        +---+
-2/5| 1 |2/1==2/5 | 2 |2/1--2/1| 3 |2/5--2/1| 4 |2/5-|
|   +---+         +---+        +---+        +---+    |
|                                                     |
|-----------------------------------------------------|
Standby u2 - protocols ready, can failover
Role history: N: standalone, A: active, S: standby, M: member
U1: N->A
Current stack management MAC is d4c1.9e18.83e1
Image-Auto-Copy is Enabled.
Stack Port Status                                 Neighbors
Unit# Stack-port1        Stack-port2              Stack-port1          Stack-port2
1     up 1/2/1 to 1/2/4  up 1/2/5                 U2(2/2/5 to 2/2/8)  U4 (4/2/5)
2     up 2/2/1           up 2/2/5 to 2/2/8        U3(3/2/1)           U1 (1/2/1 to 1/2/4)
3     up 3/2/1           up 3/2/5                 U2(2/2/1)           U4 (4/2/1)
4     up 4/2/1           up 4/2/5                 U3(3/2/5)           U1 (1/2/5)
Unit# System uptime
1 1 day(s) 23 hour(s) 19 minute(s) 9 second(s)
2 1 day(s) 23 hour(s) 10 minute(s) 32 second(s)
3 1 day(s) 23 hour(s) 10 minute(s) 31 second(s)
4 1 day(s) 23 hour(s) 10 minute(s) 43 second(s)
The system started at 16:56:58 GMT+00 Tue Jun 15 2021
```

show stack failover

Displays information about stack failover.

Syntax

show stack failover

Modes

Privileged EXEC mode

Usage Guidelines

Use the **show stack failover** command to view information about rapid failover for the stack. This command displays if the standby is ready to takeover or not.

Examples

The following example shows which unit is the current standby device and its status.

```
device# show stack failover

Current standby is unit 2. state=ready
Standby u2 - protocols ready, can failover
```

show stack flash

Displays information about flash memory for stack members.

Syntax

show stack flash

Modes

Privileged EXEC mode

Usage Guidelines

Use the **show stack flash** command to display information about flash memory for stack members.

Command Output

The **show stack flash** command displays the following information:

Output field	Description
ID	Specifies the identification number of the stack unit. Each unit in the stack has a unique ID number.
role	Specifies the role of the stack unit. The roles are controller, standby, or member.
priority	Specifies the priority value assigned to the stack unit. The default value is 128.
config	Indicates the port state (up or down) and identifies the port by number (stack-ID/slot/port). A port with the up status of up is connected to the stack, and a ports with the status of down (dn) is not connected to the stack.
The rest of the fields are used for debug purposes only.	

show stack ipc stats

Displays IPC statistics for the stack.

Syntax

show stack ipc stats

Modes

Privileged EXEC mode

Command Output

The **show stack ipc stats** command displays the following information:

Output field	Description
Vxx	Version number
Gx	
src	Source MAC address of egress IPC packets (MAC address of this unit).
max_pkt_size	Maximum packet size allowed in network.
recv	Total packets received.
SkPO	
P1	
sum	Total (P1 + skPO)
since t = x	Elapsed time used for sampling
Send message types	Totals for each type of message sent, displayed in the following format: [x] = total, where "x" represents the number of a message type from the **Message types have callbacks** list in the command output.
Recv message types	Totals for each type of message received, displayed in the format [x] = total, where "x" represents the number of a message type from the **Message types have callbacks** list in the command output.
Statistics:	
send pkt num	Total number of packets sent. One packet may contain multiple messages.
recv pkt num	Total number of packets received. One packet may contain multiple messages.
recv msg num	Total number of received messages related to Zero-touch interactive-setup (see list of types in output).
send pkt-msg num	Total number of packets containing Zero-touch interactive-setup messages sent.
send msg num	Total number of Zero-touch interactive-setup messages sent.
send frag pkt num	Number of fragmented packets sent.
recv frag pkt num	Number of fragmented packets received.
pkt buf alloc	Packet buffer allocation size.
send_delay_msg	Number of delay messages sent
send_delay_pkt	Number of delay packets sent
fwd_stby_msg	Number of standby messages forwarded
fwd_stby_pkt	Number of standby packets forwarded

Output field	Description
Reliable mail	Reliable-mail messages are used for essential communications, for example, to assign unit IDs or reload the system. Reliable-mail message statistics for specified target types: • send: number of reliable-mail messages sent • success: number of successful reliable-mail messages (sent and acknowledged) • receive: number of packets received • duplic: number of duplicate packets sent • T-us: Average time in milliseconds between packet transmission and receipt of acknowledgment
target MAC	Number of reliable-mail messages sent using the MAC address as the target address. (Reliable-mail messages are re-transmitted until acknowledgment is received.)
unrel target MAC	Number of unreliable-mail messages using the MAC address as the target address. (Unreliable-mail messages are sent only once.)
Possible errors:	Warnings or errors detected, if any.

Examples

The following example shows IPC statistics for an ICX stack.

```
device# show stack ipc stats
V80, G4, src=748e.f8f9.6300, max_pkt_size=10264, delay_buf=10264
Recv: SkP0: 10823, P1: 12954, sum: 23777, since t=2163.7 ago
Message types have callbacks:
Send message types:
    [1]=9086,          [5]=10922,         [6]=3,             [7]=809,
    [9]=630,           [13]=209,          [22]=17,           [24]=644,
    [28]=29,           [31]=1880,         [40]=15,           [60]=4,
    [77]=130,
Recv message types:
    [1]= 0:3295, 1:4896,      [5]= 0:5269, 1:5622,      [6]= 0:1, 1:2,
   [7]= 0:398, 1:411,        [9]= 0:996, 1:1139,       [13]= 0:544, 1:559,
    [23]= 0:319, 1:325,       [34]= 0:1,

Statistics:
    send pkt num          :     24369,    recv pkt num          :     23777,
    send msg num          :     24369,    recv msg num          :     23777,
    send frag pkt num     :         0,    recv frag pkt num     :         0,
    pkt buf alloc         :     24376,                          :         0,
    send_delay_msg        :         0,    send_delay_pkt        :         0,
    fwd_stby_msg          :         0,    fwd_stby_pkt          :         0,

    Reliable-mail        send  success  receive   duplic  T (us)
    target ID               2        2        0        0    82226
    target MAC              0        0        0        0    82226
    unrel target ID         5                 0
    unrel target MAC        4                 0
There is 0 current jumbo IPC session

Possible errors:
```

show stack neighbors

Displays information about stack member neighbors.

Syntax

show stack neighbors

Modes

Privileged EXEC mode

Usage Guidelines

Stack neighbors are identified by unit ID for each stack unit.

Command Output

The **show stack neighbors** command displays the following information:

Output field	Description
U#	The identification number of the unit in the stack. Each unit in the stack has a unique identification number.
Stack-port1	Identifies the neighbor stack unit for stack-port1 of the stack unit with this unit identification number (U#). The neighbor stack unit for stack-port1 of each unit in the stack is listed.
Stack-port2	Identifies the neighbor stack unit for stack-port2 of the stack unit with this unit identification number (U#). The neighbor stack unit for stack-port2 of each unit in the stack is listed.

Examples

The following example output is for a device in a stack with three members.

```
device# show stack neighbors
U#    Stack-port1                 Stack-port2
1    (1/2/1-1/2/2) to U2          (2/2/4-2/2/5) (1/2/4-1/2/6) to U3 (3/2/1-3/2/3)
2          (2/2/1) to U3 (3/2/4)                (2/2/4-2/2/5) to U1 (1/2/1-1/2/2)
3    (3/2/1-3/2/3) to U1                (1/2/4-1/2/6) (3/2/4) to U2 (2/2/1)
```

show stack rel-ipc stats

Displays statistics on reliable Interprocessor Communications (IPC) communications that occur between stack units during a session.

Syntax

show stack rel-ipc stats { **unit** *num* }

Parameters

unit *num*

Optional parameter used to specify the stack unit number for which session statistics are to be displayed. If you do not specify a stack unit, session statistics are displayed for all units in the stack.

Modes

User EXEC mode

Usage Guidelines

To display session statistics for a particular stack unit, specify the stack unit using the **unit** *num* parameters.

To display session statistics for all units in the stack, do not specify a stack unit.

Command Output

Depending on whether you specify a stack unit, the **show stack rel-ipc stats** command displays reliable IPC statistics for all units in the stack, or for a single unit in the stack.

Examples

The following example is reliable IPC statistics for a stack.

```
device# show stack rel-ipc stats unit 3
Unit 3 statistics:
Msgs: sent 907  recv 384, Pkt sends failed: 0, KA: sent 1522 recv 1522

Message types sent:
    [9]=846,          [13]=2,           [15]=31,          [59]=1,
    [76]=3,           [87]=24,

Message types received:
    [9]=366,          [13]=1,           [15]=17,

Session: base-channel, to U3, channel 0
buf size: xmt=4194312, rcv=65544, max msg=32776
State: established (last 19 minute(s) 16 second(s) ago) cnt: 1
Remote resets:                    0,      Reset packets sent:              0
Connection statistics (for current connection, if established):
Msgs sent:                      520,      Msgs rcvd:                     308
Atomic batches sent:              0,      Atomic batches rcvd:             0
Pkts sent:                     1325,      Pkts rcvd:                     945
Msg bytes sent:              262915,      Msg bytes rcvd:             131550
Pkt bytes sent:              631680,      Pkt bytes rcvd:             247560
Keepalive sent:                 231,      Keepalive rcvd:                231
Keepalive age:                    0,      Keepalive NBR age :              1
Flushes requested: 10, Suspends: 0, Resumes: 0
Packets sent with data (DAT), ACKs, and window updates (WND):
Other:      259,  ACK:          300,  WND:             6,  ACK+WND:         0
DAT:        753,  DAT+ACK:        7,  DAT+WND          0,  DA+AC+WND        0
Data retransmits done:          430,      Zero-window probes sent:         9
Dup ACK pkts rcvd:               40,      Pkts rcvd w/dup data:            0
Pkts rcvd w/data past window: 0

Session: ACL, to U3, channel 3
buf size: xmt=409608, rcv=131080, max msg=1472
State: established (last 19 minute(s) 16 second(s) ago) cnt: 1
Remote resets:                    0,      Reset packets sent:              0
Connection statistics (for current connection, if established):
Msgs sent:                      291,      Msgs rcvd:                      58
Atomic batches sent:              0,      Atomic batches rcvd:             0
Pkts sent:                      681,      Pkts rcvd:                     205
Msg bytes sent:              277656,      Msg bytes rcvd:              82128
Pkt bytes sent:              349288,      Pkt bytes rcvd:              84820
Keepalive sent:                 231,      Keepalive rcvd:                231
Keepalive age:                    0,      Keepalive NBR age :              1
Flushes requested: 0, Suspends: 0, Resumes: 0
Packets sent with data (DAT), ACKs, and window updates (WND):
Other:      232,  ACK:           12,  WND:             1,  ACK+WND:         2
DAT:        429,  DAT+ACK:        5,  DAT+WND          0,  DA+AC+WND        0
Data retransmits done:          272,      Zero-window probes sent:         5
Dup ACK pkts rcvd:               20,      Pkts rcvd w/dup data:            0
Pkts rcvd w/data past window: 0

Session: sync-reliable, to U3, channel 4
buf size: xmt=153608, rcv=10248, max msg=1472
State: established (last 16 minute(s) 38 second(s) ago) cnt: 1
Remote resets:                    0,      Reset packets sent:              0
Connection statistics (for current connection, if established):
Msgs sent:                       53,      Msgs rcvd:                       1
Atomic batches sent:              0,      Atomic batches rcvd:             0
Pkts sent:                      256,      Pkts rcvd:                      35
Msg bytes sent:               77380,      Msg bytes rcvd:               1460
Pkt bytes sent:              270984,      Pkt bytes rcvd:               1884
Keepalive sent:                 200,      Keepalive rcvd:                200
Keepalive age:                    0,      Keepalive NBR age :              1
Flushes requested: 0, Suspends: 0, Resumes: 0
Packets sent with data (DAT), ACKs, and window updates (WND):
Other:      201,  ACK:            1,  WND:             0,  ACK+WND:         0
DAT:         54,  DAT+ACK:        0,  DAT+WND          0,  DA+AC+WND        0
```

```
Data retransmits done:           41,      Zero-window probes sent:          0
Dup ACK pkts rcvd:               17,      Pkts rcvd w/dup data:             0
Pkts rcvd w/data past window: 0


Session: rcon-svr-to-3, to U3, channel 12
buf size: xmt=4008, rcv=8008, max msg=2668
State: established (last 19 minute(s) 14 second(s) ago) cnt: 1
Remote resets:                    0,      Reset packets sent:               0
Connection statistics (for current connection, if established):
Msgs sent:                       31,      Msgs rcvd:                       17
Atomic batches sent:              0,      Atomic batches rcvd:              0
Pkts sent:                      300,      Pkts rcvd:                       49
Msg bytes sent:                3592,      Msg bytes rcvd:                 155
Pkt bytes sent:               21836,      Pkt bytes rcvd:                 996
Keepalive sent:                 231,      Keepalive rcvd:                 231
Keepalive age:                    0,      Keepalive NBR age :               1
Flushes requested: 23, Suspends: 0, Resumes: 0
Packets sent with data (DAT), ACKs, and window updates (WND):
Other:      237,  ACK:           14,  WND:             0,  ACK+WND:         0
DAT:         49,  DAT+ACK:        0,  DAT+WND          0,  DA+AC+WND        0
Data retransmits done:           26,      Zero-window probes sent:          0
Dup ACK pkts rcvd:               10,      Pkts rcvd w/dup data:             0
Pkts rcvd w/data past window: 0
```

show stack stack-ports

Displays status information about stack-ports.

Syntax

show stack stack-ports

Modes

Privileged EXEC mode

Global configuration mode

Command Output

For ICX devices, an equal sign is used to indicate connections between trunk ports and the up port status is listed for all trunked ports. The **show stack stack-ports** command displays the following information:

Output field	Description
U# or ID	Stack unit identification number.
Stack-port 1	Indicates port status (up or down) and identifies the port by number (stack-ID/slot/port).
Stack-port 2	Indicates port status (up or down) and identifies the port by number (stack-ID/slot/port).
Stack-ID up (stack-ID/slot/port)	Indicates status (up or down) for the stack unit and the status (up or down) of all configured stacking ports on the unit by number (stack-ID/slot/port).

Examples

The following output displays information about stack port status. Equal signs (=) in command output show connections between trunk ports.

```
device(config-unit-3)# show stack stack-ports
                standby      active
     +---+        +---+        +---+
  2/1| 3 |2/4==2/4| 1 |2/1==2/1| 2 |
     +---+        +---+        +---+

U#  Stack-port1                                          Stack-port2
1   up 1/2/1 to 1/2/3                                   up 1/2/4 to 1/2/6
    up ports: 1/2/1, 1/2/2, 1/2/3
    up ports: 1/2/4, 1/2/5, 1/2/6

2   up 2/2/1 to 2/2/3                                   none
    up ports: 2/2/1, 2/2/2, 2/2/3
    up ports: 1/2/4, 1/2/5, 1/2/6

3   up* 3/2/1 to 3/2/3                                  up 3/2/4 to 3/2/6
    up ports: 3/2/1, 3/2/2, 3/2/3
    up ports: 3/2/4, 3/2/5, 3/2/6

Note: *: Port is up in IEEE mode, not in HiGig mode.
```

show stack zero-touch ipc

Displays information on stack zero-touch inter-processor communication (IPC) statistics.

Syntax

show stack zero-touch ipc

Modes

Privileged EXEC mode

Usage Guidelines

The command shows the number of stack interactive-setup/zero-touch packets sent and received.

Be sure to check the "possible errors" field. If the number is increasing, a problem is indicated.

The active controller uses the Rel-mail field to send reload information to discovered new units. Even though the field indicates a failure due to lack of acknowledgment, the reload may be successful.

Command Output

The **show stack zero-touch ipc** command displays the following information:

Output field	Description
V3	Version number
src	Source MAC address of egress IPC packets (MAC address of this unit).
max_pkt_size	Maximum packet size allowed in network.
recv	Total packets received.
send	Total packets sent.
Send message types	Totals for each type of message sent, displayed in the following format: [x] = total, where "x" represents the number of a message type from the **Message types have callbacks** list in the command output.
Recv message types	Totals for each type of message received, displayed in the format [x] = total, where "x" represents the number of a message type from the **Message types have callbacks** list in the command output.
Statistics:	
send pkt num	Total number of packets sent. One packet may contain multiple messages.
recv pkt num	Total number of packets received. One packet may contain multiple messages.
recv msg num	Total number of received messages related to Zero-touch interactive-setup (see list of types in output).
send pkt-msg num	Total number of packets containing Zero-touch interactive-setup messages sent.
send msg num	Total number of Zero-touch interactive-setup messages sent.
pkt buf alloc	Packet buffer allocation size.

Output field	Description
Reliable mail	Reliable-mail messages are used for essential communications, for example, to assign unit IDs or reload the system. Reliable-mail message statistics for specified target types: • send: number of reliable-mail messages sent • success: number of successful reliable-mail messages (sent and acknowledged) • receive: number of packets received • duplic: number of duplicate packets sent • T-ms: Average time in milliseconds between packet transmission and receipt of acknowledgment
target MAC	Number of reliable-mail messages sent using the MAC address as the target address. (Reliable-mail messages are re-transmitted until acknowledgment is received.)
unrel target MAC	Number of unreliable-mail messages using the MAC address as the target address. (Unreliable-mail messages are sent only once.)
Possible errors:	Warnings or errors detected, if any.

Examples

The following example shows output for the **show stack zero-touch ipc** command.

```
device# show stack zero-touch ipc
V3, , src=cc4e.246d.9e00, max_pkt_size=1468, recv 168, send 204
Message types have callbacks:
 3: ZTP-probe                          4: ZTP-request
 5: unreliable-mail                    6: reliable-mail
 7: test ipc packets                   8: cmd-to-new-unit
 9: KA-new-unit

Send message types:
   [4]=200,          [6]=4,
Recv message types:
   [3]=160,          [6]=8,

Statistics:
   send pkt num          :       204,    send pkt-msg num      :       204,
   recv pkt num          :       168,    send msg num          :       204,
   recv msg num          :       168,    pkt buf alloc         :       204,

    Reliable-mail        send  success  receive   duplic  T-ms
    target MAC              2        2        0        0     2
    unrel target MAC        0                 0

Possible errors:
device#
```

History

Release version	Command history
08.0.90	This command was introduced.

show stack zero-touch log

Displays internal logs for stack zero-touch provisioning or stack interactive-setup activity.

Syntax

show stack zero-touch log

Modes

User EXEC mode

Usage Guidelines

This command is intended for technical support use in troubleshooting problems, and the content is therefore technically detailed.

This log is shared between the stack interactive-setup and zero-touch provisioning utilities. It records a few samples of the most recent interactive-setup/zero-touch processes.

In the zero-touch log, ZTP mode = 0 indicates an SPX record; ZTP mode = 1 indicates a stacking record.

Examples

The following example displays output for the **show stack zero-touch log** command.

```
device# show stack zero-touch log

Note: The logs are shared by Spx and Stack ZTP/interactive-setup.

8m38.7989 init_zero_touch(1) u_off=0, init_T=5178 , 1U 0P A0S0 I1N 5%
9m41.5928 ZTP mode=1, 6 .5min T, cb_state = 0, diff = 580 s, diff=580 > 90 sec, trigger probe, , 1U 0P
A0S0 I1N 3%
9m41.8670 Send ZTP probes: ports: 1/2/1 to 1/2/6 1/3/1 to 1/3/6 PEs: , 1U 0P A0S0 I1N
9m53.5723 ZTP 100ms: tk=29, st=1, cb_tk=29 mx_tk=30, pb, wa=2, , 1U 0P A0S0 I1N
9m53.9720 ZTP 100ms: tk=30, st=1, cb_tk=30 mx_tk=30, ->GET_R, wa=20,, 1U 0P A0S0 I1N
10m5.5770 ZTP 100ms: tk=50, st=2, cb_tk=19 m_tk=20, pb, wa=5, , 1U 0P A0S0 I1N
10m5.5779 cb_r_probe. ztp_mode=1, rec#=2, load=162, inv [0] cc4e.2439.3700,  rec#=2, exist mac=cc4e.
2439.1a00 <= cc4e.2439.3700, cannot overwrite, 1U 0P A0S0 I1N
10m5.5781 cb_r_probe. ztp_mode=1, rec#=2, load=162, inv [0] cc4e.2439.1a00,  use old 0,  , 1U 0P A0S0
I1N
10m5.5782 cb_r_probe_2nd. rec#=2, load=192, tot C=1, ztp_m=1 , 1U 0P A0S0 I1N
10m5.9765 stk_ztp_send_id_port_acl C0 mac#=4:  636e 1a63 376b 636e , 1U 0P A0S0 I1N
10m5.9766 C0, dr=0 rin=1 me=1/4
 #1 cc4e.2439.1a00 U3, D0: 2/1 to 2/3, D1: 2/4 mac: me=1u cb=0: mis-m=0 , 1U 0P A0S0 I1N
10m5.9767 C0, dr=0 rin=1 me=2/4
 #2 cc4e.2439.3700 U2, D0: 2/1, D1: 2/4 mac: me=2u cb=3: mis-m=0 , 1U 0P A0S0 I1N
10m5.9770 Send C0 len=880, 2U: 1a00 3700 res=1 Z_CMD: CB u1 cc4e.246d.9e00, cmd=0, ack=0 #rec=2, d=0 0
0 0, H=28B 875B, ztp_m=10: m=8ef8 S=28(63843) C=110, *** Err: sta28 + size 63843=63871 > 875, 1U 0P
A0S0 I1N
10m5.9771 chain 0:
 #1 cc4e.2439.1a00 U3, D0: 2/1 to 2/3, D1: 2/4
 #2 cc4e.2439.3700 U2, D0: 2/1, D1: 2/4
, 1U 0P A0S0 I1N
10m5.9771 Send cleanup 20 sec, rel=1, to (chain# res): Send KA 20s rel=1, C0 1, , 1U 0P A0S0 I1N
10m5.9771  total=2, send clean, set 20s T, , 1U 0P A0S0 I1N
10m5.9772 ZTP 100ms: tk=51, st=2, cb_tk=20 m_tk=20, f 1 C, unsta=0, , 1U 0P A0S0 I1N
10m17.2617 Stk ZTP clean T: mode=0 SS running=0, has SS clean-T, reconfig=2, ZTP EN,  reset: free: X
C0, deinit_rel: , 1U 0P A0S0 I1N 99%
12m26.8255 ZTP chg_cb(old=0, new=1): I new-A, ZTP m=1 en, init, , 1U 0P A1S0 I1A 7%
12m44.3562 topo chg: during ztp reload, abort.
, 2U 0P A1S0 I1A
```

History

Release version	Command history
08.0.90	This command was introduced.

show stack zero-touch status

Displays status information for stack zero-touch provisioning or interactive-setup.

Syntax

show stack zero-touch status

Modes

Privileged EXEC mode

Usage Guidelines

If a unit cannot be discovered by stack interactive-setup or zero-touch provisioning, this command shows the reason. It also shows the current status of zero-touch provisioning while it is in progress.

Examples

The following example displays output for the **show stack zero-touch status** command.

```
device# show stack zero-touch status

I cannot be discovered by stack zero-touch or interactive-setup option 2. reason: has stack enable
configuration
I can be discovered by stack interactive-setup option 3.
Will clean up in 89.4 sec. Sent last keep-alive 581.1 sec ago.
zero-touch-enable and stack enable are configured. Have done 1 probes
ZTP has converted 0 new units to members.
*** ZTP is going on for 0m0s. state=start. Will trigger again 3 min after done
ZTP postponed due to topology changes: 0
My MAC used in image copy is 748e.f8f9.636e.
ACL #=0, ind=0
```

History

Release version	Command history
08.0.90	This command was introduced.

show statistics

Displays packet statistics.

Syntax

show statistics [**brief**] [**management** *num* | **unit** *unit-number*]

show statistics [**brief**] [**ethernet** *unit/slot/port* [**to** *unit/slot/port* | [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]

show statistics [**brief**] [**lag** *lag-id* [**to** *lag-id* | [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*] [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*]...]

Parameters

brief
Displays brief output.

management *num*
Displays packet statistics on the specified management interface.

unit *unit-number*
Displays packet statistics on all ports in a specific stack unit.

ethernet *unit/slot/port*
Displays packet statistics on a specific Ethernet interface.

to *unit/slot/port*
Displays packet statistics on a range of Ethernet interfaces.

lag *lag-id*
Specifies the LAG virtual interface.

to *lag-id*
Specifies a range of LAG virtual interface IDs.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Usage Guidelines

When you use the **brief** option, the output will have fewer fields.

You can view the packet statistics for a specific Ethernet interface, a list of Ethernet interfaces, and a range of Ethernet interfaces.

Command Output

The **show statistics ethernet** and **show statistics management** command display the following information.

NOTE
The output of the **show statistics** command without any options, and the output of the **show statistics** command when using the **brief** option along with **ethernet**, **management**, or **unit** options display only the Port, In Packets, Out Packets, In Errors, and Out Errors fields.

Output field	Description
Port	The port number.
Link	The link state.
State	The Spanning Tree Protocol (STP) state.
Dupl	The mode (full-duplex or half-duplex).
Speed	The port speed (10 Mbps, 100 Mbps, or 1000 Mbps).
Trunk	The trunk group number, if the port is a member of a trunk group.
Tag	Whether the port is a tagged member of a VLAN.
Pri	The QoS forwarding priority of the port (level0 to level7).
MAC	The MAC address of the port.
Name	The name of the port, if you assigned a name.
InOctets	The total number of good octets and bad octets received.
OutOctets	The total number of good octets and bad octets sent.
InPkts	The total number of packets received. The count includes rejected and local packets that are not sent to the switching core for transmission. **NOTE** In the output of the **show statistics** command without any options and when using the **brief** option along with the **ethernet**, **management**, or **unit** options, this field is shows as "In Packets."
OutPkts	The total number of good packets sent. The count includes unicast, multicast, and broadcast packets. **NOTE** In the output of the **show statistics** command without any options and when using the **brief** option along with the **ethernet**, **management**, or **unit** options, this field is shows as "Out Packets."
InBroadcastPkts	The total number of good broadcast packets received.
OutBroadcastPkts	The total number of good broadcast packets sent.
InMulticastPkts	The total number of good multicast packets received.
OutMulticastPkts	The total number of good multicast packets sent.
InUnicastPkts	The total number of good unicast packets received.
OutUnicastPkts	The total number of good unicast packets sent.
InBadPkts	The total number of packets received for which one of the following is true: • The CRC was invalid. • The packet was oversized. • Jabbers: The packets were longer than 1518 octets and had a bad FCS. • Fragments: The packets were less than 64 octets long and had a bad FCS. • The packet was undersized (short).

Output field	Description
InFragments	The total number of packets received for which both of the following were true: • The length was less than 64 bytes. • The CRC was invalid.
InDiscards	The total number of packets that were received and then dropped due to a lack of receive buffers.
CRC	The total number of packets received for which all of the following was true: • The data length was between 64 bytes and the maximum allowable frame size. • No collision or late collision was detected. • The CRC was invalid.
Collisions	The total number of packets received in which a collision event was detected.
LateCollisions	The total number of packets received in which a collision event was detected, but for which a receive error (Rx error) event was not detected.
InErrors	The total number of packets received that had alignment errors or physical errors. Excessive errors for some counters usually indicate a problem. When you operate at a half-duplex setting, some data link errors incrementing in Frame Check Sequence (FCS), alignment, runts, and collision counters are normal. Generally, a one percent ratio of errors to total traffic is acceptable for half-duplex connections. If the ratio of errors to input packets is greater than two or three percent, performance degradation can be noticed. In half-duplex environments, it is possible for both the switch and the connected device to sense the wire and transmit at exactly the same time, resulting in a collision. Collisions may cause runts, FCS, and alignment errors due to the frame not being completely copied to the wire, resulting in fragmented frames. When you operate at full-duplex, errors in FCS, Cyclic Redundancy Checks (CRC), alignment, and runt counters must be minimal. **NOTE** In the output of the **show statistics** command without any options and when using the **brief** option along with the **ethernet**, **management**, or **unit** options, this field is shown as "In Errors".
OutErrors	The total number of packets sent that had alignment errors or physical errors. **NOTE** In the output of the **show statistics** command without any options and when using the **brief** option along with the **ethernet**, **management**, or **unit** options, this field is shows as "Out Errors".
InGiantPkts	The total number of packets for which all of the following was true: • The data length was longer than the maximum allowable frame size. • No Rx error was detected. **NOTE** Packets are counted for this statistic regardless of whether the CRC is valid or invalid.
InShortPkts	The total number of packets received for which all of the following was true: • The data length was less than 64 bytes. • No Rx error was detected. • No collision or late collision was detected. **NOTE** Packets are counted for this statistic regardless of whether the CRC is valid or invalid.
InJabber	The total number of packets received for which all of the following was true: • The data length was longer than the maximum allowable frame size. • No Rx error was detected. • The CRC was invalid.
InFlowCtrlPkts	The total number of flow control packets received.

Output field	Description
OutFlowCtrlPkts	The total number of flow control packets transmitted.
InBitsPerSec	The number of bits received per second.
OutBitsPerSec	The number of bits sent per second.
InPktsPerSec	The number of packets received per second.
OutPktsPerSec	The number of packets sent per second.
InUtilization	The percentage of the port bandwidth used by received traffic.
OutUtilization	The percentage of the port bandwidth used by sent traffic.

Examples

The following is sample output from the **show statistics brief management** command.

```
device(config)# show statistics brief management 1

Port      In Packets     Out Packets  Trunk     In Errors     Out Errors
mgmt1      39946         2             2       0             0
Total      39945         2             2          0             0
```

The following is sample output from the **show statistics management** command.

```
device# show statistics management 1

Port       Link    State   Dupl Speed Trunk Tag Pvid Pri MAC             Name
mgmt1      Down    None    None None  None  No  None 0   748e.f80c.4100

 Port mgmt1 Counters:
         InOctets                    0          OutOctets                   0
           InPkts                    0            OutPkts                   0
  InBroadcastPkts                    0    OutBroadcastPkts                  0
  InMulticastPkts                    0    OutMulticastPkts                  0
    InUnicastPkts                    0      OutUnicastPkts                  0
        InBadPkts                    0
      InFragments                    0
       InDiscards                    0          OutErrors                   0
              CRC                    0         Collisions                   0
         InErrors                    0      LateCollisions                  0
      InGiantPkts                    0
      InShortPkts                    0
         InJabber                    0
   InFlowCtrlPkts                    0     OutFlowCtrlPkts                  0
     InBitsPerSec                    0       OutBitsPerSec                  0
     InPktsPerSec                    0       OutPktsPerSec                  0
    InUtilization                0.00%      OutUtilization               0.00%
```

The following is sample output from the **show statistics ethernet** command.

```
device# show statistics ethernet 1/1/1
Port       Link    State      Dupl Speed Trunk  Tag  Pvid Pri MAC             Name
1/1/1      Up      Forward    Half 100M  None   No   1    0   748e.f80c.4100

 Port 1/1/1 Counters:
        InOctets                3200          OutOctets                  256
          InPkts                  50            OutPkts                    4
  InBroadcastPkts                  0    OutBroadcastPkts                   3
  InMulticastPkts                 48    OutMulticastPkts                   0
    InUnicastPkts                  2      OutUnicastPkts                   1
        InBadPkts                  0
       InFragments                 0
        InDiscards                 0           OutErrors                   0
               CRC                 0          Collisions                   0
         InErrors                  0      LateCollisions                   0
       InGiantPkts                 0
       InShortPkts                 0
          InJabber                 0
   InFlowCtrlPkts                  0     OutFlowCtrlPkts                   0
     InBitsPerSec                264       OutBitsPerSec                  16
     InPktsPerSec                  0       OutPktsPerSec                   0
    InUtilization              0.00%      OutUtilization              0.00%
```

The following is sample output from the **show statistics brief** command.

```
device# show statistics brief

Port             In Packets       Out Packets       In Errors      Out Errors

1/1/1               7457812           7285553               3               0

1/1/2            5152995469              3731               3               0

1/1/3                472053         129827661               3               0

1/1/4            5153892037            441237               5               0

1/1/5                     0        4951785603               0               0

1/1/6                     0                 0               0               0

1/1/7                     0                 0               0               0

1/1/8                     0                 0               0               0

1/1/9                     0                 0               0               0

1/1/10                    0                 0               0               0

1/1/11                    0                 0               0               0

1/1/12                  829         138169869               0               0

lg1                     700                7000           0               0

lg256                   802                8002           0               0
```

History

Release version	Command history
08.0.61	This command was modified to add **lag** *lag-id* options.

show statistics dos-attack

Displays information about ICMP and TCP SYN packets dropped because burst thresholds were exceeded.

Syntax

show statistics dos-attack

Modes

User EXEC mode

Usage Guidelines

The **show statistics dos-attack** command without parameters is not supported on ICX 8200 devices.

Examples

The following example displays output of the **show statistics dos-attack** command.

```
device# show statistics dos-attack
------------------------------ Local Attack Statistics -------------------------
               ICMP                                    TCP-SYN
---------------------------------------    ---------------------------------------
Dropped pkts Blocked pkts Lockup Count    Dropped pkts Blocked pkts Lockup Count
------------ ------------ ------------    ------------ ------------ ------------
0             0             0              0             0             0

---------------------------- Transit Attack Statistics ------------------------------
                     ICMP                                      TCP-SYN
-----------------------------------------------    ---------------------------------------
Port/VLAN Dropped pkts Blocked pkts Lockup Count    Dropped pkts Blocked pkts Lockup Count
--------- ------------ ------------ ------------    ------------ ------------ ------------
VLAN10    0             0
```

History

Release version	Command history
08.0.61	The command output was modified.

show statistics dos-attack icmp

Displays information about ICMP packets that exceeded burst thresholds.

Syntax

show statistics dos-attack icmp

Modes

User EXEC mode

Usage Guidelines

Command Output

The **show statistics dos-attack icmp** command displays the following information:

Examples

The following example displays output of the **show statistics dos-attack icmp** command.

```
device# show statistics dos-attack icmp
Global Attack Statistics
------------------------
  ICMP
----------------------
Dropped pkts
------------
12691072

Interface Attack Statistics
---------------------------
  ICMP
--------
Port       Dropped pkts
---------- ---------------
1/1/10     1191808
```

History

Release version	Command history
10.0.00	This command was introduced.

show statistics dos-attack icmp fragments

Displays information about ICMP packet fragments received.

Syntax

show statistics dos-attack icmp fragments

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

This command is supported on ICX 8200 devices only.

Command Output

The **show statistics dos-attack icmp fragments** command displays the following information:

Examples

The following example displays output of the **show statistics dos-attack icmp fragments** command.

```
device# show statistics dos-attack icmp fragments
icmp fragment Statistics
------------------------
   Drop_count
------------------
  32396
```

History

Release version	Command history
10.0.00	This command was introduced.

show statistics dos-attack tcp

Displays information about TCP SYN packets that exceeded burst thresholds.

Syntax

show statistics dos-attack tcp

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show statistics dos-attack tcp** command displays the following information:

Output field	Description
Flags drop count	
Drop_count	
Port - Dropped Pkts	

Examples

The following example displays output of the **show statistics dos-attack tcp** command.

```
device# show statistics dos-attack tcp
Global Attack Statistics
------------------------
     TCP-SYN
-----------------------
  Flags drop count    Drop_count
------------------    --------------
  52586                61240

Interface Attack Statistics
---------------------------
   TCP-SYN
--------------------------------
Port       Dropped pkts
--------- ----------------------
1/1/10    61240
```

History

Release version	Command history
10.0.00	This command was introduced.

show statistics stack-ports

Displays information about all stacking ports in a stack topology.

Syntax

show statistics stack-ports

Modes

Privileged EXEC mode

Command Output

The **show statistics stack-ports** command displays the following information:

Output field	Description
Port	The number of the port (stack-unit number, slot number, and port number).
In Packets	The number of packets received on this port (incoming packets).
Out Packets	The number of packets sent from this port (outgoing packets).
In Errors	The number of errors received on this port (incoming errors).
Out Errors	The number of errors sent from this port (outgoing errors).

Examples

The following example output is statistics for all stack ports in a stack with seven member units.

```
device# show statistics stack-ports

Port      In Packets   Out Packets   In Errors   Out Errors
1/2/1          22223          4528           0            0
1/2/2          35506          3844           0            0
2/2/1           3161         34173           0            0
2/2/2          24721          3676           0            0
3/2/1           3048         23881           0            0
3/2/2          13540          2857           0            0
4/2/1           2862         13537           0            0
4/2/2           3626          3184           0            0
5/2/1           3183          3621           0            0
5/2/2           3265         13508           0            0
6/2/1          14020          3655           0            0
6/3/1           3652         17705           0            0
7/2/1          17705          3658           0            0
7/3/1           4047         21802           0            0
TOTAL         154559        153629           0            0
```

show statistics traffic-policy

Displays the rate limiting traffic counters and the total packet count and byte count of the traffic filtered by ACL statements.

Syntax

show statistics traffic-policy *TPD-name*

Parameters

TPD-name

Specifies the name of the traffic policy definition for which you want to display ACL and traffic policy counters.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show statistics traffic-policy** command displays the following information.

Output field	Description
Traffic Policy	The name of the traffic policy.
General Counters	
Port Region#	The port region to which the active traffic policy applies.
Byte Count	The number of bytes that were filtered (matched ACL clauses).
Packet Count	The number of packets that were filtered (matched ACL clauses).
Rate Limiting Counters (in bytes)	
Port Region#	The port region to which the active traffic policy applies.
Green Conformance	The number of bytes that did not exceed the committed information rate (CIR) packet rate.
Yellow Conformance	The number of bytes that exceeded the CIR packet rate.
Red Conformance	The number of bytes that exceeded the peak information rate (PIR) packet rate.

Examples

The following example shows sample output from the **show statistics traffic-policy** command. The output displays ACL and traffic policy counters.

```
device# show statistics traffic-policy tf125c

Traffic Policy tf125c:

General Counters:
Port Region#         Byte Count       Packet Count
---------------- -------------------- --------------------
0           235400192           1839051
All port regions  235400192           1839051

Rate Limiting Counters (in bytes):
Port Region#    Green/Yellow Conformance    Red Conformance
-------------- --------------------------- --------------------
0               225023872                   10376320
All port regs   225023872                   10376320
```

show statistics tunnel

Displays statistical information for GRE and IPsec tunnels.

Syntax

show statistics tunnel[*tunnel-id*]

Parameters

tunnel-id

Specifies the tunnel ID. The default range is from 1 through 44. When the maximum number of GRE tunnels is set to 64 by using the **system-max gre-tunnels** command, the range is from 1 through 92.

Modes

User EXEC mode

Usage Guidelines

This command may be entered in all configuration modes.

Command Output

The **show statistics tunnel** command displays the following information:

Output field		Description
Tunnel Status		Indicates whether the tunnel and line protocol are up or down. Possible values are: • up/up—The tunnel and line protocol are up. • up/down—The tunnel is up and the line protocol is down. • down/up—The tunnel is down and the line protocol is up. • down/down—The tunnel and line protocol are down.
Packet Received		Displays the number of packets received on the tunnel since it was last cleared by the administrator.
Packet Sent		Displays the number of packets sent on the tunnel since it was last cleared by the administrator.
KA recv		Displays the number of keepalive packets received on the tunnel since it was last cleared by the administrator.
KA sent		Displays the number of keepalive packets sent on the tunnel since it was last cleared by the administrator.
GRE tunnel		
	InOctets	Displays the number of incoming octets received on the tunnel since it was last cleared by the administrator.
	OutOctets	Displays the number of outgoing octets sent on the tunnel since it was last cleared by the administrator.
	InPkts	Displays the number of incoming packets received on the tunnel since it was last cleared by the administrator.
	OutPkts	Displays the number of outgoing packets sent on the tunnel since it was last cleared by the administrator.

Output field		Description
IPsec tunnel		
	Bytes Received	Displays the number of bytes received on the tunnel since it was last cleared by the administrator.
	Bytes Sent	Displays the number of bytes sent on the tunnel since it was last cleared by the administrator.

Examples

The following example shows how to display statistical information for tunnel 1.

```
device> show statistics tunnel 1

IP GRE Tunnels
      Tunnel Status   Packet Received   Packet Sent   KA recv   KA sent
  1   up/up           0                 0             0         0

IP  GRE Tunnel 1 HW Counters:
       InOctets            90             OutOctets             90
       InPkts               1             OutPkts                1
```

The following example shows how to display statistical information for all tunnels.

```
device> show statistics tunnel

IP GRE Tunnels
      Tunnel Status  Packet Received  Packet Sent  KA recv  KA sent

IPSEC Tunnels
      Tunnel Status  Packet Received  Packet Sent  Bytes Received  Bytes Sent
  9   down/down      0                0            0               0
  10  up/up          50               16442474     7300            9372173444
```

History

Release version	Command history
08.0.40	This command was modified to display GRE-tunnel hardware counters on the RUCKUS ICX 7xxx series.

show stp-bpdu-guard

Displays the BPDU guard state.

Syntax

show stp-bpdu-guard

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

VLAN configuration mode

Examples

The following example displays the BPDU guard state.

```
device# show stp-bpdu-guard
BPDU Guard Enabled on:
Interface      Violation
Port 1/1/1     No
Port 1/1/2     No
Port 1/1/3     No
Port 1/1/4     No
Port 1/1/5     No
Port 1/1/6     No
Port 1/1/7     No
Port 1/1/8     No
Port 1/1/9     No
Port 1/1/10    No
Port 1/1/11    No
Port 1/1/12    Yes
Port 1/1/13    No
```

show stp-group

Displays STP topology groups.

Syntax

show stp-group [*group-id*]

Parameters

group-id

Specifies the topology group ID.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

VLAN configuration mode

Examples

The following example displays sample output of the **show stp-group** command.

```
device# show stp-group
Spanning tree Group 1
=================
 master-vlan 2
 member-vlan none

 Common control ports           L2 protocol
  no control ports configured
 Per vlan free ports
 ethernet 1/1/2                  Vlan 2
 ethernet 1/1/3                  Vlan 2
 ethernet 1/1/4                  Vlan 2
```

show stp-protect-ports

Displays the STP protection configuration.

Syntax

show stp-protect-ports [**ethernet** *stackid/slot/port*]

Parameters

ethernet *stackid/slot/port*

Displays the STP protection configuration for a specific Ethernet interface.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

VLAN configuration mode

Examples

The following example displays the STP protection configuration.

```
device# show stp-protect-ports
Port          BPDU Drop Count
1/1/3             478
1/1/5             213
1/1/6             0
1/1/12            31
```

The following example shows the STP protection configuration for a particular Ethernet interface.

```
device# show stp-protect-ports ethernet 1/1/3
STP-protect is enabled on port 1/1/3. BPDU drop count is 478
```

show symmetrical-flow-control

Displays the status of symmetrical flow control.

Syntax

show symmetrical-flow-control

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show symmetrical-flow-control** command.

```
device# show symmetrical-flow-control
Global Symmetrical Flow Control Status: Enable on Priorities (0-4)
```

show tech-support

Displays technical support information.

Syntax

show tech-support [**cancel**]

Parameters

cancel

Cancels previous invocations of the **show tech-support** command.

Modes

Privileged EXEC mode

Usage Guidelines

The **show tech support** command can produce extensive output.

Examples

The following example shows output for the **show tech-support** command.

```
device# show tech-support
Gathering Show Output,  This may take a while...
Disable page display mode
======================================================================
BEGIN: show web
TIME STAMP:  Tue Jul 20 11:50:37 2021

======================================================================
HTTP server status: Disabled
HTTPS server status: Enabled
No web connection.
======================================================================
TIME STAMP:  Tue Jul 20 11:50:37 2021

END: show web
======================================================================
======================================================================
BEGIN: show vlan brief
TIME STAMP:  Tue Jul 20 11:50:37 2021

======================================================================

System-max vlan Params: Max(4095) Default(1024) Current(1024)
Default vlan Id :1
Total Number of Vlan Configured :222
VLANs Configured :1 to 39 42 to 98 100 to 225

--More--, next page: Space, next line: Return key, quit: Control-c^C
```

The following example cancels previous invocations of the **show tech-support** command.

```
device# show tech-support cancel
Cancelling..it may take a while
Successfully Cancelled
device#
```

History

Release version	Command history
08.0.50	This command was introduced.
09.0.00	The **acl**, **cluster**, **cpu**, **l2**, **l3**, **license**, **memory**, **multicast**, **multicast6**, **openflow**, **packet-loss**, **poe**, and **stack** options are deprecated but data for these parameters is included in the output.

show telnet

Displays Telnet connection and configuration details.

Syntax

show telnet[**config**]

Parameters

config

Displays Telnet configuration information.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show telnetconfig** command displays the following information:

Output field	Description
Telnet Server	Telnet server status - enabled or disabled.
Idle timeout	The configured idle timeout of the Telnet server.
Login timeout	The configured login timeout of the Telnet server.
Login retries	The configured number of retries allowed to connect to the Telnet server.
Strict management VRF	Strict management VRF is enabled or disabled for the Telnet server.
Authentication	The authentication is enabled or disabled for the Telnet server.

Examples

The following example displays output of the **show telnet** command showing the Telnet connections and their status.

```
device(config)# show telnet

Telnet connections (inbound):
1         closed
2         closed
3         closed
4         closed
5         closed
Telnet connection (outbound):
6         closed
```

The following example displays output of the **show telnet config** command showing Telnet configuration details.

```
device(config)# show telnet config
Telnet server                   : Enabled
Idle timeout (minutes)          : 0
Login timeout (minutes)         : 2
Login retries                   : 4
Strict management VRF           : Disabled
Authentication                  : Disabled
Telnet IPv4 clients             : All
Telnet IPv6 clients             : All
```

show topology-group

Displays topology group information.

Syntax

show topology-group [*group-id*]

Parameters

group-id

Displays the information of the topology group of the specified ID.

Modes

User EXEC mode

Command Output

The **show topology-group** command displays the following information:

Output field	Description
master-vlan	The master VLAN for the topology group. The settings for STP, MRP, or VSRP on the control ports in the master VLAN apply to all control ports in the member VLANs within the topology group.
member-vlan	The member VLANs in the topology group.
Common control ports	The master VLAN ports that are configured with Layer 2 protocol information. The Layer 2 protocol configuration and state of these ports in the master VLAN applies to the same port numbers in all the member VLANs.
Per vlan free ports	The ports that are not controlled by the Layer 2 protocol information in the master VLAN.

Examples

The following example displays the topology group information.

```
device# show topology-group
Topology Group 3
================
master-vlan 2
member-vlan none
Common control ports       L2 protocol
ethernet 1/1/1             MRP
ethernet 1/1/2             MRP
ethernet 1/1/5             VSRP
ethernet 1/2/22            VSRP
Per vlan free ports
ethernet 1/2/3             Vlan 2
ethernet 1/1/4             Vlan 2
ethernet 1/2/11            Vlan 2
ethernet 1/2/12            Vlan 2
```

show traffic-policy

Displays traffic policies that are currently defined on the device.

Syntax

show traffic-policy [*TPD-name*]

Parameters

TPD-name

Specifies the name of the traffic policy.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show traffic-policy** command displays the following information.

Output field	Description
Traffic Policy	The name of the traffic policy.
Metering	Shows whether rate limiting is configured as part of the traffic policy: • Enabled: The traffic policy includes a rate-limiting configuration. • Disabled: The traffic policy does not include a rate-limiting configuration.
Mode	If rate limiting is enabled, this field shows the type of metering enabled on the port: • Fixed Rate-Limiting • Adaptive Rate-Limiting
cir	The committed information rate, in kilobits per second, for the adaptive rate-limiting policy.
cbs	The committed burst size, in bytes, for the adaptive rate-limiting policy.
pir	The peak information rate, in kilobits per second, for the adaptive rate-limiting policy.
pbs	The peak burst size, in bytes, for the adaptive rate-limiting policy.
Counting	Shows whether ACL counting is configured as part of the traffic policy: • Enabled: The traffic policy includes an ACL counting configuration. • Not Enabled: The traffic policy does not include an ACL counting configuration.
Number of References/Bindings	The number of port regions to which this traffic policy applies.

Examples

The following example is sample output from the **show traffic-policy** command. The output displays traffic policies that are currently defined on the device.

```
device# show traffic-policy t_voip

Traffic Policy - t_voip:
Metering Enabled, Parameters:
Mode: Adaptive Rate-Limiting
cir: 100 Pkts/s, cbs: 2000 Pkts, pir: 200 Pkts/s, pbs: 4000 Pkts
Counting Not Enabled
```

show users

Displays the user account information.

Syntax

show users

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Command Output

The **show users** command displays the following information:

Output field	Description
Username	The username of each user.
Password	The password for each user.
Encrypt	Whether the password encryption is enabled or not.
Priv	The privilege level for the user: 0 - Super User level (full read-write access), 4 - Port Configuration level, 5 - Read Only level
Status	Whether the user status is enabled or not.
Expire Time	The password expiration time in days.

Examples

The following example displays output of the **show users** command.

```
device(config)# show users
Username   Password                            Encrypt   Priv Status   Expire Time
==========================================================================================
wonka      $1$JVbXZqTW$g9N1/WUipXg6jM6OUKHQZ. enabled   0    enabled  Never
xyz        $1$13zNygo2$vXOKCwghNvXT/YegDawpU0 enabled   0    enabled  Never
aopo       $1$d04FqfAw$W6WiSw6gGJv//C1pvJFpQ. enabled   0    enabled  Never
```

show uufb enabled-ports

Displays the ports that are enabled for Unknown Unicast Flood Blocking (UUFB).

Syntax

show uufb enabled-ports

Modes

User EXEC mode

Command Output

The **show uufb enabled-ports** command displays the following information:

Output field	Description
UUFB Enabled Ports	The ports that are enabled for UUFB.

Examples

The following example displays output of the **show uufb enabled-ports** command.

```
device# show uufb enabled-ports
UUFB Enabled Ports
==================
eth 1/1/1
eth 1/1/2
```

History

Release Version	Command History
09.0.10	This command was introduced.

show version

Displays the new flash image running on the device.

Syntax

show version

Modes

Privileged EXEC mode

Usage Guidelines

Depending on device support, the serial numbers of the pluggable or fixed modules are displayed in the output. The role of the stack unit and its boot-up ID are displayed in the last line of command output. No role is displayed for standalone units. Show version also displays the recommended u-boot version, even while displaying details for remote units.

Whenever current boot-version is not same as the recommended boot-monitor version, it will display alert message for the user to indicate the mismatch in boot-monitor version.

Beginning with 08.0.90, there will be primary and secondary partitions for the boot image.

Note: Current boot-monitor version may be older or newer to the recommended version, to receive the alert message.

Similar information is displayed for the show version unit <unit num> CLI. This information will be displayed for each unit in a standalone or stacking environment.

The following table shows the reason for the system reload and the change in **show version** output command for ICX 7650 and ICX 7850 devices.

TABLE 19 Reason for Reloading and the Change in Output

Reason for reloading	Output
ISSU upgrade	The system : started=warm start reloaded=by "issu".
Cold start/boot mode invalid/power cycle	The system : started=cold start.
Software upgrade/downgrade, user interface/reset button	The system : started=warm start reloaded=by "reload"
FI crash/linux signal	The system : started=warm start reloaded=by "crash"
FI soft lockup watchdog timeout	The system : started=warm start reloaded=by "watchdog
Joining/leaving stack	The system : started=warm start reloaded=by "stack"
Factory button(holding button for 10s)	The system : started=factory reset reloaded=by "factory reset"

Examples

The following is an example of the output displayed from the **show version** command on an ICX 7850 device.

```
device# show version
Copyright (c) Ruckus Networks, Inc. All rights reserved.
    UNIT 1: compiled on Feb  5 2019 at 23:40:39 labeled as TNR08090
      (62651708 bytes) from Primary TNR08090.bin (UFI)
        SW: Version 08.0.90
      Compressed Primary Boot Code size = 1573376, Version:10.1.15T235 (tnu10115)
       Compiled on Thu Jan 31 07:09:04 2019

  HW: Stackable ICX7850-32Q
==========================================================================
UNIT 1: SL 1: ICX7850-32Q-L3-BASE 12-port Management Module
      Serial  #:FLU3321P00L
      Software Package: ICX7850_L3_SOFT_PACKAGE
      Current License: l3-prem
      P-ASIC  0: type B870, rev 01  Chip BCM56870_A0
==========================================================================
UNIT 1: SL 2: ICX7800-12X100G 12-port 1200G Module
==========================================================================
UNIT 1: SL 3: ICX7800-8X100G 8-port 800G Module
==========================================================================
2000 MHz ARM processor ARMv8 88 MHz bus
8192 KB boot flash memory
2048 MB code flash memory
3910 MB DRAM
STACKID 1  system uptime is 42 second(s)
The system started at 06:56:20 GMT+00 Tue Jan 02 2001

The system : started=warm start   reloaded=by "reload"
```

History

Release version	Command history
08.0.30j	The output of the **show version** command is updated when a module is removed form the device.
08.0.60	The command has been modified to show both original factory-installed license and current license.
08.0.61	The command has been modified to add license information for individual stack units.
08.0.80	The output prompts you with a warning message if there is a mismatch with the recommended u-boot version.

show vlan

Displays the VLAN information.

Syntax

show vlan [*vlan-id* [*num*] | **brief** { **ethernet** *unit/slot/port* | **lag** *lag-id* } | **ethernet** *unit/slot/port* | **lag** *lag-id*]

Parameters

vlan-id

Specifies the VLAN ID.

num

Specifies the number of Layer 3 VLAN entries to skip before the display begins.

brief

Displays the VLAN information summary.

ethernet *unit/slot/port*

Specifies the Ethernet port for which you want to view VLAN details.

lag *lag-id*

Specifies the LAG virtual interface.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

VLAN configuration mode

Command Output

The **show vlan brief** command displays the following information:

Output field	Description
System-max vlan Params	The system maximum VLAN values (maximum, default, and current).
Default vlan Id	The default VLAN ID number.
Total Number of Vlan Configured	The total number of VLANs configured on the device.
VLANs Configured	The VLAN ID numbers of the VLANs configured on the device.
Untagged VLAN	The number of untagged VLANs.

Examples

The following example shows the VLAN information for a specific VLAN.

```
device> show vlan 101

Total PORT-VLAN entries: 3
Maximum PORT-VLAN entries: 4095

Legend: [Stk=Stack-Id, S=Slot]

PORT-VLAN 101, Name mvrp_vlan101, Type dynamic, Priority level0, in single spanning tree domain
 Untagged Ports: None
   Tagged Ports: None
 Mac-Vlan Ports: None
  Dynamic Ports: (U1/M1)  13  33
  Dynamic Ports: (U2/M1)  13  31
  Dynamic Ports: (U3/M1)  11  21
  Dynamic Ports: (LAG)     1
     Monitoring: Disabled
```

The following example shows the output of the **show vlan** command.

```
device> show vlan

Total PORT-VLAN entries: 4
Maximum PORT-VLAN entries: 4060
Legend: [Stk=Stack-Unit, S=Slot]
PORT-VLAN 1, Name DEFAULT-VLAN, Priority level0, Spanning tree On
Untagged Ports: (Stk0/S1) 3  4  5  6  7  8  9  10 11 12 13 14
Untagged Ports: (Stk0/S1) 15 16 17 18 19 20 21 22 23 24 25 26
Untagged Ports: (Stk0/S1) 27 28 29 30 31 32 33 34 35 36 37 38
Untagged Ports: (Stk0/S1) 39 40 41 42 43 44 45 46 47 48
Untagged Ports: (Stk0/S2) 1  2
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
PORT-VLAN 10, Name [None], Priority level0, Spanning tree On
Untagged Ports: (Stk0/S1) 1
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Enabled
PORT-VLAN 20, Name [None], Priority level0, Spanning tree On
Untagged Ports: (Stk0/S1) 2
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
```

The following example shows the output of the **show vlan brief** command.

```
device> show vlan brief

System-max vlan Params: Max(4095) Default(1024) Current(1024)
Default vlan Id :4000
Total Number of VLANs :3

Total Number of Vlan Configured :2
VLANs Configured :4000 4094

Total Number of Dynamic VLANs :1
Dynamic VLANs :101
```

The following example shows the output of the port-based **show vlan brief ethernet** command. The output indicates the membership type of the VLAN.

```
device(config-if-e1000-1/1/5)# show vlan brief ethernet 1/1/5
Port 1/1/5 is a member of 11 VLANs
VLANs 100 to 110
Untagged VLAN      : <empty>
Tagged VLANs    : 100 to 110
```

The following example shows the output of the port-based **show vlan brief ethernet** command for a flexible authentication port.

```
device> show vlan brief ethernet 1/1/12

Port 1/1/2 is a member of 12 VLANs
VLANs 1 to 11
Untagged VLAN  : 1
Tagged   VLANs : 2 to 4
Dynamic VLANs: 5 to 11
```

History

Release version	Command history
08.0.50	This command was modified to display the VLAN membership type in the **show vlan brief ethernet** command output.
08.0.61	This command was modified to add the **lag** *lag-id* option.
08.0.70	The **show vlan brief ethernet** command was modified to display the VLAN membership type.
08.0.90	The command was modified to display dynamic VLANs and ports created by MVRP.

show vlan-group

Displays the VLAN group configuration information.

Syntax

show vlan-group [*group-id*]

Parameters

group-id

Displays the VLAN group configuration information for the specified VLAN group ID.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Usage Guidelines

If you do not specify a group ID, the configuration information for all the configured VLAN groups is displayed.

Examples

The following example displays sample output of the **show vlan-group** command.

```
device# show vlan-group
vlan-group 1 vlan 2 to 20
tagged ethe 1/1/1 to 1/1/2
!
vlan-group 2 vlan 21 to 40
tagged ethe 1/1/1 to 1/1/2
!
```

The following example displays sample output of the **show vlan-group** command for a specific group ID.

```
device# show vlan-group 10
vlan-group 10 vlan 11 to 16
!
```

show voice-vlan

Displays the configuration of a voice VLAN for a particular port or for all ports.

Syntax

show voice-vlan [**ethernet** *stack-id/slot/port*]

Parameters

ethernet *stack-id/slot/port*

Displays the voice VLAN configuration for the specified Ethernet interface.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Examples

The following is sample output from the **show voice-vlan** command for all ports.

```
device# show voice-vlan

Port ID        Voice-vlan
1/1/2             1001
1/1/8             150
1/1/15            200
```

The following is sample output from the **show voice-vlan** command for a specific port.

```
device# show voice-vlan ethernet 1/1/2

Voice vlan ID for port 1/1/2: 1001
```

show vrf

Displays IP information for the specified Virtual Routing and Forwarding (VRF).

Syntax

show vrf [*vrf-name* | **detail** | **resource** [**detail**]]

Parameters

vrf-name

Specifies the VRF for which you want to display the information.

detail

Displays detailed VRF instance information. When used along with the **resource** keyword, displays detailed resource information.

resource

Displays resources used by all VRFs.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

VRF configuration mode

Command Output

The **show vrf** command displays the following information.

Output field	Description
VRF *vrf-name*	The name of the VRF.
default RD	The default route distinguisher for the VRF.
Table ID	The table ID for the VRF.
Routes	The total number of IPv4 and IPv6 unicast routes configured on this VRF.
Configured as management-vrf	Indicates that the specified VRF is configured as a management VRF.
IP Router-Id	The 32-bit number that uniquely identifies the router.
Number of Unicast Routes	The number of unicast routes configured on this VRF.

Examples

The following is sample output from the **show vrf** *vrf-name* command.

```
device(config)# show vrf mvrf

VRF mvrf, default RD 1100:1100, Table ID 11
Configured as management-vrf
IP Router-Id: 10.0.0.1
Interfaces:
ve3300 ve3400
Address Family IPv4
Max Routes: 641
Number of Unicast Routes: 2
Address Family IPv6
Max Routes: 64
Number of Unicast Routes: 2
```

show vsrp

Displays the VSRP information.

Syntax

show vsrp[**aware**][**vlan***vlan-id*[*vrid-num*]|**vrid***vrid-num*]

show vsrp[**brief**]

Parameters

aware

Displays information about VSRP-aware devices.

vlan*vlan-id*

Displays VSRP information for the VLAN ID.

vrid*vrid-num*

Displays information for the ports with VSRP enabled.

brief

Displays the VSRP information summary.

Modes

User EXEC mode

Command Output

The **show vsrp** command displays the following information:

Output field	Description
Total number of VSRP routers defined	The total number of VRIDs configured on this device.
VLAN	The VLAN on which VSRP is configured.
auth-type	The authentication type in effect on the ports in the VSRP VLAN.
VRID	The VRID for which the VSRP information is displayed.
state	The device VSRP state for the VRID. The state can be one of the following: • initialize: The VRID is not enabled (activated). If the state remains "initialize" after you activate the VRID, make sure that the VRID is also configured on the other routers and that the routers can communicate with each other. • standby: This device is a backup for the VRID. • master: This device is the master for the VRID.
Administrative-status	The administrative status of the VRID. The administrative status can be one of the following: • disabled: The VRID is configured on the interface but VSRP or VRRP-E has not been activated on the interface. • enabled: VSRP has been activated on the interface.

Output field	Description
Advertise-backup	Whether the device is enabled to send VSRP Hello messages when it is a backup. This field can have one of the following values: • disabled: The device does not send Hello messages when it is a backup. • enabled: The device sends Hello messages when it is a backup.
Preempt-mode	Whether the device can be preempted by a device with a higher VSRP priority after this device becomes the master. This field can have one of the following values: • disabled: The device cannot be preempted. • enabled: The device can be preempted.
save-current	The source of VSRP timer values preferred when you save the configuration. This field can have one of the following values: • false: The timer values configured on this device are saved. • true: The timer values most recently received from the master are saved instead of the locally configured values.
Configured	Indicates the parameter value configured on this device.
Current	Indicates the parameter value received from the master.
Unit	Indicates the formula used tor calculating the VSRP priority and the timer scales in effect for the VSRP timers. A timer true value is the value listed in the Configured or Current field divided by the scale value.
priority	The device preferability for becoming the master for the VRID. During negotiation, the backup with the highest priority becomes the master. If two or more backups are tied with the highest priority, the backup interface with the highest IP address becomes the master for the VRID.
hello-interval	The number of seconds between Hello messages from the master to the backups for a given VRID.
dead-interval	The configured value for the dead interval. The dead interval is the number of seconds a backup waits for a Hello message from the master for the VRID before determining that the master is no longer active. If the master does not send a Hello message before the dead interval expires, the backups negotiate (compare priorities) to select a new master for the VRID. If the value is 0, then you have not configured this parameter.
hold-interval	The number of seconds a backup that intends to become the master will wait before actually beginning to forward Layer 2 traffic for the VRID. If the backup receives a Hello message with a higher priority than its own before the hold-down interval expires, the backup remains in the backup state and does not become the new master.
initial-ttl	The number of hops a Hello message can traverse after leaving the device before the Hello message is dropped. A metro ring counts as one hop, regardless of the number of nodes in the ring.
next hello sent in	The amount of time until the master dead interval expires. If the backup does not receive a Hello message from the master by the time the interval expires, either the IP address listed for the master will change to the IP address of the new master, or this Layer 3 switch itself will become the master. This field applies only when this device is a backup.
Member ports	The ports in the VRID.
Operational ports	The member ports that are currently up.
Forwarding ports	The member ports that are currently in the forwarding state. Ports that are forwarding on the master are listed. Ports on the Standby, which are in the blocking state, are not listed.

The **show vsrp aware** command displays the following information:

Output field	Description
Last Port	The most recent active port connection to the VRID. This is the port connected to the current master. If a failover occurs, the VSRP-aware device changes the port to the port connected to the new master. The VSRP-aware device uses this port to send and receive data through the backed-up node.

Examples

The following example shows the output of the **show vsrpaware** command.

```
device# show vsrp aware
Aware port listing
VLAN ID    VRID    Last Port
100        1       1/3/2
200        2       1/4/1
```

The following example shows the output of the **show vsrpvlan** *vlan-idvrid-num* command.

```
device# show vsrp vlan 100 100
VLAN 100
auth-type no authentication
VRID 100
========
State     Administrative-status    Advertise-backup    Preempt-mode    save-current
master    enabled                  disabled            true            false
Parameter          Configured       Current            Unit/Formula
priority           100               50                (100-0)*(2.0/4.0)
hello-interval     1                 1                 sec/1
dead-interval      3                 3                 sec/1
hold-interval      3                 3                 sec/1
initial-ttl        2                 2                 hops
next hello sent in 00:00:00.3
Member ports:      ethe 1/2/5 to 1/2/8
Operational ports: ethe 1/2/5 ethe 1/2/8
Forwarding ports:  ethe 1/2/5 ethe 1/2/8
Restart ports:     1/2/5(1) 1/2/6(1) 1/2/7(1) 1/2/8(1)
```

show vxlan tunnel

Displays overlay gateway tunnel information.

Syntax

show vxlan tunnel [**brief** | *tunnel_id* | **statistics**]

Parameters

brief

Displays brief information for all VXLAN tunnels.

tunnel_id

Displays detailed information for specified VXLAN tunnel.

statistics

Displays counters for all VXLAN tunnels.

Modes

User EXEC mode

Command Output

The **show vxlan tunnel** command displays the following information:

Output field	Description

Examples

The following example shows a sample output of the **show vxlan tunnel** command.

```
device#
```

History

Release version	Command history
08.0.70	The command was introduced.

show web

Displays web login details.

Syntax

show web

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Command Output

The **show web** command displays the following information:

Output field	Description
User	The user logged into the web session.
Privilege	The privilege level for the user: 0 - Super User level (full read-write access), 4 - Port Configuration level, 5 - Read Only level
IP address	IP address assigned to the device.
Timeout (secs)	Configured web session timeout value.
Connection	Web access connection status. HTTPS is enabled by default.

Examples

The following example displays web login details.

```
device# show web
HTTP server status: Enabled
HTTPS server status: Enabled

Web session management:
User    Privilege     IP address     Timeout(secs) CONNECTION
admin   READ-WRITE    172.26.78.58    10            HTTP
admin   READ-WRITE    10.198.138.97   10            HTTPS
```

History

Release version	Command history
09.0.00	The output was modified to include timeout field.

show webauth

Displays Web Authentication configuration details.

Syntax

show webauth [**allowed-list** | **authenticating-list** | **blocked-list** | **vlan** *vlan-id* [**passcode** | **webpage**]]

Parameters

allowed-list
Displays a list of hosts that are currently authenticated.

authenticating-list
Displays a list of hosts that are trying to authenticate.

blocked-list
Displays a list of hosts that are currently blocked from any Web Authentication attempt.

vlan*vlan-id*
Displays Web Authentication details on a specific VLAN.

passcode
Displays current dynamic passcode details.

webpage
Displays what text has been configured for Web Authentication pages.

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Interface configuration mode

Web Authentication configuration mode

Usage Guidelines

The **show webauth** command by itself displays information for all VLANs on which Web Authentication is enabled.

Command Output

The **show webauth** command displays the following information:

TABLE 20 Field Description for show webauth Command Output

Field	Description
WEB AUTHENTICATION (VLAN #)	Identifies the VLAN on which Web Authentication is enabled.
attempt-max-num	The maximum number of Web Authentication attempts during a cycle.

TABLE 20 Field Description for show webauth Command Output (continued)

Field	Description
host-max-num	The maximum number of users that can be authenticated at one time.
block duration	The number of seconds a user who failed Web Authentication must wait before attempting to be authenticated.
cycle-time	The number of seconds in one Web Authentication cycle.
port-down-authenticated-mac-cleanup	Whether this option is enabled or disabled. If enabled, all authenticated users are de-authenticated if all the ports in the VLAN go down.
reauth-time	The number of seconds an authenticated user remains authenticated. Once this timer expires, the user must re-authenticate.
authenticated-mac-age-time	If a user is inactive, the number of seconds a user has before the user-associated MAC address is aged out. The user will be forced to re-authenticate.
webauth-redirect-address	Displays a redirect address if one has been configured; otherwise, displays 0 (the default).
dns-filter	Shows the definition of any DNS filter that has been set.
white-list *ID*	Displays any white-lists configured for sites or servers allowed Web Authentication access, including white-list ID and IP address or FQDN.
authentication mode	The authentication mode: • username and password (default) • passcode • captive-portal • none Also displays configuration details for the authentication mode.
RADIUS accounting	Whether RADIUS accounting is enabled or disabled.
Trusted port list	The statically configured trusted ports of the Web Authentication VLAN.
Secure login (HTTPS)	Whether HTTPS is enabled or disabled.
Web Page Customizations	The current configuration for the text that appears on the Web Authentication pages. Either "Custom Text" or "Default Text" displays for each page type: • "Custom Text" means the message for the page has been customized. The custom text is also displayed. • "Default Text" means the default message that ships with the FastIron switch is used. The actual text on the Web Authentication pages can be displayed using the **show webauth vlan** *<vlan-id>* **webpage** command.
Host statistics	The authentication status and the number of hosts in each state.

The **show webauth vlan** command displays the following information.

Output field	Description
WEB AUTHENTICATION (VLAN #)	Identifies the VLAN on which Web Authentication is enabled.
attempt-max-num	The maximum number of Web Authentication attempts during a cycle.
host-max-num	The maximum number of users that can be authenticated at one time.
block duration	The number of seconds a user who failed Web Authentication must wait before attempting to be authenticated.
cycle-time	The number of seconds in one Web Authentication cycle.

Output field	Description
port-down-authenticated-mac-cleanup	Indicates if this option is enabled or disabled. If enabled, all authenticated users are deauthenticated if all the ports in the VLAN go down.
reauth-time	The number of seconds an authenticated user remains authenticated. Once this timer expires, the user must reauthenticate.
authenticated-mac-age-time	If a user is inactive, this time shows how many seconds a user has before the user-associated MAC address is aged out. The user will be forced to reauthenticate.
webauth-redirect-address	Displays a redirect address if one has been configured; otherwise, displays 0 (the default).
dns-filter	Shows the definition of any DNS filter that has been set.
white-list *ID*	Displays any white-lists configured for sites or servers allowed Web Authentication access, including white-list ID and IP address or FQDN.
authentication mode	The authentication mode: username and password (default), passcode, captive-portal, or none. Also displays configuration details for the authentication mode.
RADIUS accounting	Whether RADIUS accounting is enabled or disabled.
Trusted port list	The statically-configured trusted ports of the Web Authentication VLAN.
Secure login (HTTPS)	Whether HTTPS is enabled or disabled.
Host statistics	The authentication status and the number of hosts in each state.

The **show webauth allowed-list** command displays the following information:

Output field	Description
VLAN #: Web Authentication	The ID of the VLAN on which Web Authentication is enabled.
Web Authenticated List MAC Address	The MAC addresses that have been authenticated.
AuthMode	The client is authenticated using internal server or external server.
User Name	The authenticated username.
Configuration Static/Dynamic	If the MAC address was dynamically (passed Web Authentication) or statically (added to the authenticated list using the **add mac** command) authenticated.
Authenticated Duration HH:MM:SS	The remainder of time the MAC address will remain authenticated.
Dynamic ACL	The dynamically assigned ACL.

The **show webauth authenticating-list** command displays the following information:

Output field	Description
VLAN #: Web Authentication	The ID of the VLAN on which Web Authentication is enabled.
MAC Address	The MAC addresses that are trying to be authenticated.
AuthMode	The client is authenticated using internal server or external server.
User Name	The User Name associated with the MAC address.
# of Failed Attempts	Number of authentication attempts that have failed.
Cycle Time Remaining	The remaining time the user has to be authenticated before the current authentication cycle expires. Once it expires, the user must enter a valid URL again to display the Web Authentication Welcome page.

The **show webauth blocked-list** command displays the following information:

Output field	Description
VLAN #: Web Authentication	The ID of the VLAN on which Web Authentication is enabled.

Output field	Description
Web Block List MAC Address	The MAC addresses that have been blocked from Web Authentication.
AuthMode	The client is authenticated using internal server or external server.
User Name	The username associated with the MAC address.
Configuration Static/Dynamic	If the MAC address was dynamically or statically blocked. The **block mac** command statically blocks MAC addresses.
Block Duration Remaining	The remaining time the MAC address has before the user with that MAC address can attempt Web Authentication.

Examples

The following example displays sample output of the **show webauth vlan** command.

```
device# show webauth vlan 300
================================================================================
WEB AUTHENTICATION (VLAN 300): Disable (Default)
attempt-max-num: 5 (Default)
host-max-num: 0 (Default)
block duration: 90 (Default)
cycle-time: 600 (Default)
port-down-authenticated-mac-cleanup: Enable (Default)
reauth-time: 60
authenticated-mac-age-time: 3600 (Default)
webauth-redirect-address: none (Default)
dns-filter: Disable (Default)
white-list 10 www.commscope.com (104.18.14.129)
white-list 30 192.168.0.1 0.0.0.255
white-list 35 192.168.12.2 0.0.0.255
white-list 60 10.177.17.67 0.0.0.127
authentication mode: captive portal
Radius accounting: Enable (Default)
Trusted port list: ether 3/1/4, lag 1
Secure Login (HTTPS): Enable (Default)
Host statistics:
Number of hosts dynamically authenticated: 0
Number of hosts statically authenticated: 0
Number of hosts dynamically blocked: 0
Number of hosts statically blocked: 0
Number of hosts authenticating: 0
```

The following example displays sample output of the **show webauth allowed-list** command.

```
device# show webauth allowed-list
================================================================================
VLAN 3: Web Authentication, Mode: I = Internal E = External
--------------------------------------------------------------------------------
Web Authenticated List                Configuration   Authenticated Duration  Dynamic
MAC Address       User Name   mode    Static/Dynamic  HH:MM:SS                ACL
--------------------------------------------------------------------------------
000c.2973.a42b    ruckus      E       D               1 day, 11:33:16         acl1
1222.0a15.f045    super       E       D               1 day, 11:32:51         acl1
1222.0a15.f044    foundry     E       D               1 day, 11:32:48         acl1
1222.0a15.f043    ruckus      E       D               1 day, 11:32:47         acl1
1222.0a15.f042    spirent     E       D               1 day, 11:32:4          acl1
```

The following example displays sample output of the **show webauth authenticating-list** command.

```
device# show webauth authenticating-list
================================================================================
VLAN 3: Web Authentication, AuthMode: I=Internal E=External
--------------------------------------------------------------------------------
Web Authenticating List             # of Failed  Cycle Time Remaining
MAC Address        User Name  mode  Attempts     HH:MM:SS
--------------------------------------------------------------------------------
000c.2973.a42b     N/A        E     0            00:01:36
```

The following example displays sample output of the **show webauth blocked-list** command.

```
device# show webauth blocked-list
================================================================================
VLAN 3: Web Authentication, AuthMode: I=Internal E=External
--------------------------------------------------------------------------------
Block List                        Configuration mode  Block Duration Remaining
MAC Address     User Name  mode   Static/Dynamic
--------------------------------------------------------------------------------
000c.2973.a42b  User1      E      D                   00:00:04
```

The following example displays sample output of the **show webauth vlan***vlan-id* **passcode** command.

```
device# show webauth vlan 25 passcode
Current Passcode : 1389
This passcode is valid for 35089 seconds
```

The following is a sample output of the **show webauthvlan***vlan-id***webpage** command.

```
device# show webauth vlan 25 webpage
================================================
Web Page Customizations (VLAN 25):
  Top (Header): Default Text
    "<h3>Welcome to Ruckus Networks Web Authentication Homepage</h3>"
  Bottom (Footer): Custom Text
    "Copyright 2009 SNL"
  Title: Default Text
    "Web Authentication"
  Login Button: Custom Text
    "Sign On"
  Web Page Logo: blogo.gif
    align: left (Default)
  Web Page Terms and Conditions: policy1.txt
```

History

Release version	Command history
08.0.40	The output was modified to include "mode" and "Dynamic ACL" fields.
09.0.00	The output was modified to include white-list fields and to exclude Web Page customization fields.
09.0.10	The output was modified to include webauth page label configuration and other customization fields.

show who

Displays details of the SSH and Telnet connections.

Syntax

show who

Modes

User EXEC mode

Privileged EXEC mode

Global configuration mode

Examples

The following example displays output of the **show who** command.

```
device(config)# show who
Console connections:
        established, privilege super-user, in config mode
        you are connecting to this session
        12 seconds in idle
Telnet server status: Enabled
Telnet connections (inbound):
 1      closed
 2      closed
 3      closed
 4      closed
 5      closed
Telnet connections (outbound):
 6      closed
 7      closed
 8      closed
 9      closed
 10     closed
SSH server status: Disabled
SSH copy-received-cos status: Disabled
SSH connections:
SSH connections (inbound):
 1      closed
 2      closed
 3      closed
 4      closed
 5      closed
SSH connection (outbound):
 6      closed
 7      closed
 8      closed
 9      closed
 10     closed
```

Commands Si - Z

site (VXLAN)

Create one remote site for the VXLAN overlay-gateway.

Syntax

site *site-name*

no site *site-name*

Command Default

Remote site is not configured.

Parameters

site-name

Specifies the name of the remote site.

Modes

Overlay-gateway configuration mode

Usage Guidelines

The **no** form of the command removes the configured remote site.

The command is supported only on ICX 7650 and ICX 7850 devices.

A maximum of 32 remote sites (VXLAN tunnels) can be configured.

A maximum of 32 remote sites can be configured. For each remote site, you must configure an IP address in site configuration mode. In site configuration mode, you must also extend the mapped VLAN to the site.

Examples

The following example creates and configures remote site site1.

```
device# configure terminal
device(config)#overlay-gateway gate1
device(config-overlay-gw-gate1)# site site1
device(config-overlay-gw-gate1-site1)# ip address 67.67.67.1
device(config-overlay-gw-gate1-site1)# extend vlan add 2
device(config-overlay-gw-gate1-site1)# end

device# show running-config overlay-gateway
overlay-gateway gateway1
type layer2-extension
ip interface Loopback 1
map vlan 2 vni 3
site site1
ip address 67.67.67.1
extend vlan add 2
```

History

Release version	Command history
08.0.70	This command was introduced.

slow-start

Configures a slow-start timer interval to extend the time interval beyond the dead-interval time before a Virtual Router Redundancy Protocol Extended (VRRP-E) master device assumes the role of master device after being offline. When the original master device went offline, a backup VRRP-E device with a lower priority became the master device.

Syntax

slow-start*seconds*

no slow-start*seconds*

Command Default

If a slow-start timer is not configured, the master device assumes control from a backup device immediately after the dead interval.

Parameters

seconds

Sets the number of seconds for the slow-start timer. Range from 1 through 57600.

Modes

VRRP-E router configuration mode

Usage Guidelines

When the VRRP-E slow-start timer is enabled, if the master VRRP-E device goes down, the backup device with the highest priority takes over after the expiration of the dead interval. If the original master device subsequently comes back up again, the amount of time specified by the VRRP-E slow-start timer elapses before the original master device takes over from the backup device (which became the master device when the original master device went offline).

This command is supported only for VRRP-E.

The **no** form removes the slow-start configuration.

Examples

The following example sets the slow-start timer interval to 40 seconds.

```
device# configure terminal
device(config)# router vrrp-extended
device(config-vrrpe-router)# slow-start 40
```

slow-path-forwarding

Configures the slow path forwarding of IPv4 and IPv6 multicast data packets.

Syntax

slow-path-forwarding { **disable-all** | **enable-ssm** | **filter** { *acl-name* | *acl-number* }

no slow-path-forwarding { **disable-all** | **enable-ssm** | **filter** { *acl-name* | *acl-number* }

Command Default

Slow path forwarding of IPv4 and IPv6 multicast data packets is enabled by default. Slow path forwarding of Source-Specific Multicast (SSM) groups is not enabled.

Parameters

disable-all
Disables the slow path forwarding of all IP multicast data packets.

enable-ssm
Enables slow path forwarding for SSM groups.

filter
Permits or denies the slow path forwarding of IP multicast data packets for groups in an access control list (ACL).

acl-name
Specifies the ACL name.

acl-number
Specifies the ACL number.

Modes

PIM router configuration mode

PIM VRF router configuration mode

IPv6 PIM router configuration mode

IPv6 PIM VRF router configuration mode

Usage Guidelines

If assigning some SSM groups in an ACL to be associated with the **filter** keyword, slow path forwarding must first be enabled for the SSM group using the **enable-ssm** keyword

The **no** form of the command restores the defaults.

Examples

The following example disables the slow path forwarding for all IP multicast data packets.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# slow-path-forwarding disable-all
```

The following example enables the slow path forwarding for SSM groups for IPv6 multicast data packets.

```
device# configure terminal
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# slow-path-forwarding enable-ssm
```

History

Release version	Command history
08.0.95	This command was introduced.

snmp-server community

Configures the SNMP community string and access privileges.

Syntax

snmp-server community *community-string* { **ro** | **rw** } **view** *mib-view*

no snmp-server community*community-string* { **ro** | **rw** } **view** *mib-view*

Command Default

The SNMP community string is not configured.

Parameters

community-string
: Configures the SNMP community string that you must enter to gain SNMP access. The string is an ASCII string and can have up to 32 characters.

ro
: Configures the community string to have read-only ("get") access.

rw
: Configures the community string to have read-write ("set") access.

view*mib-view*
: Associates a view to the members of the community string. Enter up to 32 alphanumeric characters.

Modes

Global configuration mode

Usage Guidelines

The **view***mib-view* parameter allows you to associate a view to the members of this community string. If no view is specified, access to the full MIB is granted. The view that you want must exist before you can associate it to a community string.

You can set just one access type, either read-only (ro) or read/write (rw) for a single SNMP community instead of setting both access types. The read/write access supersedes read-only configuration and if read/write is configured for a specified community after read only, the running configuration file only saves the rw configuration line.

If you issue the **no snmp-server community public ro** command and then enter the **write memory** command to save the configuration, the read-only "public" community string is removed and will have no SNMP access. If for some reason the device is brought down and then brought up, the **no snmp-server community public ro** command is restored in the system and the read-only "public" community string has no SNMP access.

The **no** form of the command removes an SNMP community string.

Examples

The following example configures an SNMP community string with read-only access.

```
device# configure terminal
device(config)# snmp-server community private ro
```

The following example associates a view to the members of a community string.

```
device# configure terminal
device(config)# snmp-server community private rw view view1
```

History

Release version	Command history
09.0.10e	The command was modified to remove the ACL options.

snmp-server contact

Configures the identification of the contact person for the managed node.

Syntax

snmp-server contact *name*

no snmp-server contact *name*

Command Default

Contact information is not configured.

Parameters

name

The contact name. The name can be up to 255 alphanumeric characters. Spaces are allowed.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the contact information.

Examples

The following example configures the identification of the contact person for the device.

```
device(config)# snmp-server contact Sales
```

snmp-server disable

Disables SNMP MIB support.

Syntax

snmp-server disablemib*table*

no snmp-server disablemib*table*

Command Default

SNMP MIB support is enabled.

Parameters

mib*table*

Disables MIB support for a given table. Support for the following tables can be disabled:

dot1d-tp-fdb

Disables SNMP support for dot1dTpFdbTable.

dot1q-fdb

Disables SNMP support for dot1qFdbTable.

dot1q-tp-fdb

Disables SNMP support for dot1qTpFdbTable.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command enables SNMP MIB support.

Examples

The following example disables dot1d-tp-fdb MIB support.

```
device(config)# snmp-server disable mib dot1d-tp-fdb
```

History

Release version	Command history
09.0.00	This command was modified to remove the options **mib enet-pw**, **mib pw**, **mib vil-ep**, and **mib vpls-ep-vlan-ext**.

snmp-server enable

Configures SNMP access only to specific clients.

Syntax

snmp-server enable ethernet *stack/slot/port* [**to** *stack/slot/port* | [**ethernet** *stack/slot/port* **to** *stack/slot/port* | **ethernet** *stack/slot/port*] ...]

no snmp-server enable ethernet *stack/slot/port* [**to** *stack/slot/port* | [**ethernet** *stack/slot/port* **to** *stack/slot/port* | **ethernet** *stack/slot/port*] ...]

snmp-server enable vlan *vlan-id*

no snmp-server enable vlan *vlan-id*

Command Default

SNMP access is not restricted.

Parameters

ethernet *stack/slot/port*
Specifies the Ethernet interface on which web management should be enabled.

to *stack/slot/port*
Specifies the range of Ethernet interfaces.

vlan *vlan-id*
Specifies that web management should be enabled on the clients of the specified VLAN.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the SNMP access restriction.

Examples

The following example configures the SNMP access only to a client in VLAN 40.

```
device(config)# snmp-server enable vlan 40
```

The following example configures SNMP access to a range of Ethernet interfaces.

```
device(config)# snmp-server enable ethernet 1/1/1 to ethernet 1/1/5
```

snmp-server enable mib

Enables MIB support for SNMP server.

Syntax

snmp-server enable mib*mib-name*

no snmp-server enable mib*mib-name*

Command Default

MIB support is enabled by default.

Parameters

mib-name

Enables support for one of the following MIBs:

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the SNMP MIB support.

History

Release version	Command history
09.0.00	This command was modified to remove the options **np-qos-stat** and **tm-dest-qstat**.

snmp-server enable traps

Enables SNMP traps for various events.

Syntax

snmp-server enable traps*event*

no snmp-server enable traps*event*

Command Default

Traps are enabled by default.

Parameters

event

The event for which the traps should be enabled. Enables the traps for one of the following events:

authentication

Generates the trap when the authentication occurs.

cold-start

Generates the trap after a cold start.

fan-failure

Generates the trap when there is a fan failure and when the issue is resolved.

fan-speed-change

Generates the trap when there is a change in fan speed.

ikev2

Generates the trap for Internet Key Exchange Protocol, v2 (IKEv2) events.

ipsec

Generates the trap for Internet Protocol Security (IPsec) events.

link-down

Generates the trap when the link is down.

link-oam

Generates the trap for link OAM.

link-up

Generates the trap when the link is up.

mac-authentication

Generates the trap when a MAC address is added or deleted.

mac-notification

Generates the trap after a MAC authentication.

metro-ring

Generates the trap when there is a change in the Metro Ring configuration.

module-inserted
Generates the trap when a module is inserted.

module-removed
Generates the trap when a module is removed.

new-root
Generates a control STP trap for newRoot events, as defined in RFC 1493.

nlp-phy-40g
Generates the trap during PHY calibration on the 40-Gbps and 4x10-Gbps stack ports.

power-supply-failure
Generates the trap when there is a power supply failure and when the issue is resolved.

syslog
Generates syslogMsgNotification traps.

temperature
Generates the trap when there is a temperature change.

topology-change
Generates the control STP trap topologyChange defined in RFC 1493 for topology changes.

udld
Generates the control enterprise traps for Unidirectional Link Detection (UDLD) events.

vsrp
Generates the control enterprise Virtual Switch Redundancy Protocol (VSRP) trap snTrapVsrpIfStateChange.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables the traps.

Examples

The following example enables SNMP traps on the device for MAC notification globally.

```
device(config)# snmp-server enable traps mac-notification
```

History

Release version	Command history
08.0.10	The **mac-notification** keyword was added.
08.0.50	The **ipsec** and **ikev2** keywords were added.
09.0.00	The keyword **redundant-module** was deprecated.

snmp-server enable traps holddown-time

Configures the wait time before starting to send SNMP traps.

Syntax

snmp-server enable traps holddown-time *time*

no snmp-server enable traps holddown-time *time*

Command Default

The default hold-down time is 60 seconds.

Parameters

time

The time in seconds. The valid range is from 1 through 600 seconds. The default is 60 seconds.

Modes

Global configuration mode

Usage Guidelines

When a device starts up, the software waits for Layer 2 convergence (STP) and Layer 3 convergence (OSPF) before beginning to send SNMP traps to external SNMP servers. Until convergence occurs, the device may not be able to reach the servers, in which case the messages are lost.

By default, a device uses a one-minute hold-down time to wait for the convergence to occur before starting to send SNMP traps. After the hold-down time expires, the device sends the traps, including traps such as "cold start" or "warm start" that occur before the hold-down time expires.

When you have a stack of eight or more units, you must increase the trap hold-down time from the default (60 seconds) to five minutes (300 seconds). This will prevent the loss of initial boot traps.

The **no** form of the command changes the hold-down time to the default value.

Examples

The following example changes the hold-down time for SNMP traps to 30 seconds.

```
device(config)# snmp-server enable traps holddown-time 30
```

snmp-server enable traps mac-notification

Enables the MAC-notification trap whenever a MAC address event is generated on a device or an interface.

Syntax

snmp-server enable traps mac-notification

no snmp-server enable traps mac-notification

Command Default

MAC-notification traps are disabled on the device.

Modes

Global configuration

Interface configuration

Usage Guidelines

The **no** form of this command disables SNMP traps for MAC-notification events. The SNMP MAC-notification trap functionality allows an SNMPv3 trap to be sent to the SNMP manager when MAC addresses are added or deleted in the device.

Examples

The following example enables SNMP traps on the device for MAC-notification globally:

```
device(config)# snmp-server enable traps mac-notification
```

The following example disables SNMP traps on the device for MAC-notification globally:

```
device(config)# no snmp-server enable traps mac-notification
```

History

Release version	Command history
08.0.10	This command was introduced.

snmp-server engineid local

Modifies the default SNMPv3 engine ID.

Syntax

snmp-server engineid local *engineid-string*

no snmp-server engineid local *engineid-string*

Command Default

A default engine ID is generated during system startup.

Parameters

engineid-string

Specifies the engine ID as a hexidecimal character string with an even number of characters.

Modes

Global configuration mode

Usage Guidelines

The default engine ID guarantees the uniqueness of the engine ID for SNMP version 3. A default engine ID is generated during system startup. To determine the default engine ID of the device, enter the **show snmp engineid** command. Use the **snmp-server engineid local** command to change the default engine ID.

Each user localized key depends on the SNMP server engine ID, so all users must be reconfigured whenever the SNMP server engine ID changes.

NOTE
Because the current implementation of SNMP version 3 does not support Notification, remote engine IDs cannot be configured at this time.

The *engineid-string* variable consists of 11 octets, entered as hexadecimal values. There are two hexadecimal characters in each octet. There must be an even number of hexadecimal characters in an engine ID.

The default engine ID has a maximum of 11 octets:

- Octets 1 through 4 represent the agent's SNMP management private enterprise number as assigned by the Internet Assigned Numbers Authority (IANA). The most significant bit of Octet 1 is "1". For example, "000007c7" is the ID for RUCKUS in hexadecimal. With Octet 1 always equal to "1", the first four octets in the default engine ID is always "800007c7" (which is 1991 in decimal).
- Octet 5 is always 03 in hexadecimal and indicates that the next set of values represents a MAC address.
- Octets 6 through 11 form the MAC address of the lowest port in the management module.

The engine ID must be a unique number among the various SNMP engines in the management domain.

The **no** form of the command sets the engine ID to the default.

Examples

The following example shows how to change the default engine ID.

```
device(config)# snmp-server engineid local 800007c70300e05290ab60
```

snmp-server group

Creates user-defined groups for SNMPv1/v2c/v3 and configures read, write, and notify permissions to access the MIB view.

Syntax

snmp-server group*groupname*{**v1**|**v2c**}[**notify***viewname*][**read***viewname*] [**write***viewname*]

no snmp-server group*groupname*{**v1**|**v2c**}[**notify***viewname*][**read***viewname*] [**write***viewname*]

snmp-server group*groupname***v3**{**auth**|**noauth**|**priv**}[**notify***viewname*][**read***viewname*] [**write***viewname*]

no snmp-server group*groupname***v3**{**auth**|**noauth**|**priv**}[**notify***viewname*][**read***viewname*] [**write***viewname*]

Command Default

Six default groups are supported to associate the default SNMPv3 user groups and the default SNMPv1/v2c community groups with the view configuration.

NOTE
This command is not used for SNMP version 1 and SNMP version 2. In these versions, groups and group views are created internally using community strings. When a community string is created, two groups are created, based on the community string name. One group is for SNMP version 1 packets, while the other is for SNMP version 2 packets.

Parameters

groupname
Specifies the name of the SNMP group to be created.

v1
Specifies SNMP version 1.

v2c
Specifies SNMP version 2.

v3
Specifies SNMP version 3.

auth
Specifies that only authenticated packets with no privacy are allowed to access the specified view. This parameter is available only for SNMPv3 user groups.

noauth
Specifies that no authentication and no privacy are required to access the specified view. This parameter is available only for SNMPv3 user groups.

priv
Specifies that authentication and privacy are required from the users to access the view. This parameter is available only for SNMPv3 user groups.

notify*viewname*
Specifies the name of the view that enables you to provide access to the MIB for trap or inform. This allows the administrators to restrict the scope of varbind objects that will be part of the notification. All of the varbinds need to be in the included view for the notification to be created.

read*viewname*
: Specifies the name of the view that enables you to provide read access.

write*viewname*
: Specifies the name of the view that enables you to provide both read and write access.

viewname
: Specifies the name of the view to which the SNMP group members have access. If no view is specified, then the group has no access to the MIB. The default viewname is "all", which allows access to the entire MIB.

Modes

Global configuration mode

Usage Guidelines

Maximum number of SNMP groups supported is 10.

The **no** form of the command removes the configured SNMP server group.

Examples

The following example creates SNMP server group entries for SNMPv3 user group with auth permission.

```
device(config)# snmp-server group admin v3 auth read all write all notify all
```

History

Release version	Command history
08.0.20a	The **ipv6***ipv6-ACL-name* keyword-argument pair was introduced.
09.0.10e	The command was modified to remove the ACL options.

snmp-server host

Configures a trap receiver to ensure that all SNMP traps sent by the RUCKUS device go to the same SNMP trap receiver or set of receivers, typically one or more host devices on the network.

Syntax

snmp-server host { *host-ipaddr* | **ipv6** *host-ipv6-addr* } [**version** { **v1** | **v2c** } [*community-string* [**port** *port-num*]]]

no snmp-server host { *host-ipaddr* | **ipv6** *host-ipv6-addr* } [**version** { **v1** | **v2c** } [*community-string* [**port** *port-num*]]]

snmp-server host { *host-ipaddr* | **ipv6** *host-ipv6-addr* } [**version v3** { **auth** | **noauth** | **priv** } *name* [**port** *port-num*]]

no snmp-server host { *host-ipaddr* | **ipv6** *host-ipv6-addr* } [**version v3** { **auth** | **noauth** | **priv** } *name* [**port** *port-num*]]

Command Default

The SNMP trap receiver is not configured.

Parameters

host-ipaddr
: Specifies the IP address of the trap receiver.

ipv6 *host-ipv6-addr*
: Specifies the IPv6 address of the trap receiver.

version
: Configures the SNMP version or security model.

v1
: Specifies SNMP version 1.

v2c
: Specifies SNMP version 2c.

community-string
: Specifies an SNMP community string configured on the device.

v3
: Specifies SNMP version 3.

auth
: Specifies that only authenticated packets with no privacy are allowed to access the specified view. This parameter is available only for SNMPv3 user groups.

noauth
: Specifies that no authentication and no privacy are required to access the specified view. This parameter is available only for SNMPv3 user groups.

priv
: Specifies that authentication and privacy are required from the users to access the view. This parameter is available only for SNMPv3 user groups.

name

Specifies the SNMP security name or user.

port *port-num*

Configures the UDP port to be used by the trap receiver. The default port number is 162.

Modes

Global configuration mode

Usage Guidelines

The device sends all the SNMP traps to the specified hosts and includes the specified community string. Administrators can therefore filter for traps from a device based on IP address or community string. When you add a trap receiver, the software automatically encrypts the community string you associate with the receiver when the string is displayed by the CLI or Web Management interface. The software does not encrypt the string in the SNMP traps sent to the receiver.

The SNMP community string configured can be a read-only string or a read-write string. The string is not used to authenticate access to the trap host but is instead a useful method for filtering traps on the host. For example, if you configure each of your devices that use the trap host to send a different community string, you can easily distinguish among the traps from different devices based on the community strings.

The Multiple SNMP Community Names feature introduced the ability to configure one default community string (where a community string is not mapped to any SNMP context) and one community string per SNMP context for a single trap host. One community name per line is allowed. For protocol-specific MIBS, devices send the trap originating from specific VRF instance and the corresponding community name mapped to the SNMP context associated with that VRF is sent in the trap. When the devices send the trap originating from a default VRF instance, the default community string is sent in the trap. Using the community string in the trap, administrators can easily distinguish among the traps originated from different VRF instances. if you enter the **show running-config** command it displays multiple **snmp-server host** command instances for each host; one community name per line.

Specifying the port allows you to configure several trap receivers in a system. With this parameter, a network management application can coexist in the same system. Devices can be configured to send copies of traps to more than one network management application.

The **no** form of the command removes the configured SNMP server host.

Examples

The following example configures 10.10.10.1 as the trap receiver.

```
device(config)# snmp-server host 10.10.10.1 version v2c mypublic port 200
```

The following example configures 2002::2:2 as the trap receiver and specifies that only authenticated packets with no privacy are allowed to access the specified view.

```
device(config)# snmp-server host ipv6 2002::2:2 version v3 auth user-private port 110
```

snmp-server legacy

Configures legacy values for SNMP MIBs.

Syntax

snmp-server legacy { **iftype** | **module-type** }

no snmp-server legacy { **iftype** | **module-type** }

Command Default

SNMP MIBs have the user-configured values.

Parameters

iftype

Configures to the use of legacy Ethernet interface names for ifType.

module-type

Configures to the use of legacy enum values for snAgentConfigModuleType.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command changes the settings back to the non-legacy values.

Examples

The following example configures to the use of legacy Ethernet interface names for ifType.

```
device(config)# snmp-server legacy iftype
```

snmp-server location

Configures the SNMP server location.

Syntax

snmp-server location *string*

no snmp-server location *string*

Command Default

The SNMP server location is not configured.

Parameters

string

The physical location of the server. The string can be up to 255 alphanumeric characters. Spaces are allowed.

Modes

Global configuration mode

Usage Guidelines

You can configure a location for a device and save the information locally in the configuration file for future reference. This information is not required for system operation but is suggested.

The **no** form of the command removes the configured location.

Examples

The following example configures the physical location of the SNMP server.

```
device(config)# snmp-server location United States
```

snmp-server log-suppress-timer

Configures the SNMP authentication failure suppress time interval.

Syntax

snmp-server log-suppress-timer[*value*]

Parameters

value

Specifies the time interval.

Modes

Global configuration mode

Usage Guidelines

The suppress timer can be configured between 1 to 5 minutes and the default value is five minutes.

Examples

The following example configures the SNMP authentication failure time interval to 3 minutes.

```
device(config)# snmp-server log-suppress-timer 3
```

History

Release version	Command history
9.0.00	This command was introduced.

snmp-server preserve-statistics

Decouples SNMP statistics from CLI-based statistics.

Syntax

snmp-server preserve-statistics

no snmp-server preserve-statistics

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command couples the SNMP statistics from the CLI based statistics.

Examples

The following example shows how to decouple SNMP statistics from CLI-based statistics.

```
device(config)# snmp-server preserve-statistics
```

snmp-server pw-check

Controls password check on file operation MIB objects.

Syntax

snmp-server pw-check

no snmp-server pw-check

Command Default

Password check is not configured.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the password check on file operation MIB objects.

Once the password check is enabled, if a third-party SNMP management application does not add a password to the password field when it sends SNMP set requests to a device, by default the device rejects the request.

Examples

The following example configures password check on file operation MIB objects.

```
device(config)# snmp-server pw-check
```

snmp-server user

Creates or changes the attributes of SNMPv3 users, and allows an SNMPv3 user to be associated with the user-defined group name.

Syntax

snmp-server user*user-name**group-name***v3**[**auth**{**md5** |**sha**} *auth-password*[**priv**{**aes**|**des**}*password-string*]]

no snmp-server user*user-name**group-name***v3**[**auth**{**md5** |**sha**} *auth-password*[**priv**{**aes**|**des**}*password-string*]]

Command Default

SNMP users are not configured.

Parameters

user-name
: Specifies the SNMP username or security name used to access the management module.

group-name
: Identifies the SNMP group to which this user is associated or mapped.

v3
: Configures the group using the User Security Model (SNMPv3).

auth
: Specifies the type of encryption the user must have to be authenticated.

md5
: Configures the HMAC MD5 algorithm for authentication.

sha
: Configures the HMAC SHA algorithm for authentication.

auth-password
: Specifies the authorization password for the user (8 through 16 characters for MD5; 8 through 20 characters for SHA).

priv
: Configures the encryption type (DES or AES) used to encrypt the privacy password.

aes
: Configures CFB128-AES-128 encryption for privacy.

des
: Configures CBC56-DES encryption for privacy.

password-string
: Specifies the DES or AES password string for SNMPv3 encryption for the user. The password must have a minimum of 8 characters.

Modes

Global configuration mode

Usage Guidelines

The **snmp-server user** command creates an SNMP user, defines the group to which the user will be associated, defines the type of authentication to be used for SNMP access by this user, specifies either the **AES** or **DES** encryption types used to encrypt the privacy password.

All users must be mapped to an SNMP group. Groups are defined using the **snmp-server group** command.

> **NOTE**
> The SNMP group to which the user account will be mapped should be configured before creating the user accounts; otherwise, the group will be created without any views.

The **priv** parameter specifies the encryption type **(DES or AES)** used to encrypt the privacy password. If the encrypted keyword is used, do the following:

- If **DES** is the privacy protocol to be used, enter **des** followed by a 16-octet DES key in hexadecimal format for the DES-password-key . If you include the encrypted keyword, enter a password string of at least 8 characters.
- If **AES** is the privacy protocol to be used, enter **aes** followed by the AES password key. For a small password key, enter 12 characters. For a big password key, enter 16 characters.

The **no** form of the command removes the SNMP access.

Examples

The following example configures an SNMP user account.

```
device(config)# snmp-server user user1 admin v3 auth md5 abc123 priv des xyz123
```

History

Release version	Command history
09.0.10e	The command was modified to remove the ACL options.

snmp-server view

Creates an SNMP view.

Syntax

snmp-server view *view-name mib-subtree* { **excluded** | **included** }

no snmp-server view *view-name mib-subtree* { **excluded** | **included** }

Command Default

All MIB objects are automatically excluded from any view unless they are explicitly included.

Parameters

view-name

Configures the alphanumeric name to identify the view. The names cannot contain spaces.

mib-subtree

Configures the name of the MIB object or family. You can use a wildcard (*) in the numbers to specify a sub-tree family.

excluded

Configures the MIB family identified to be excluded from the view.

included

Configures the MIB family identified to be included in the view.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the configured SNMP view.

SNMP views are named groups of MIB objects that can be associated with user accounts to allow limited access for viewing and modification of SNMP statistics and system configuration. SNMP views can also be used with other commands that take SNMP views as an argument.

MIB objects and MIB sub-trees can be identified by a name or by the numbers called object identifiers (OIDs) that represent the position of the object or sub-tree in the MIB hierarchy.

NOTE
All MIB objects are automatically excluded from any view unless they are explicitly included; therefore, when creating views using the **snmp-server view** command, indicate which portion of the MIB you want users to access.

Examples

The following example assigns the view called "admin" a community string or user group. The "admin" view allows access to the MIB objects that begin with the 1.3.6.1.4.1.1991 object identifier.

```
device(config)# snmp-server view admin 1.3.6.1.4.1.1991 included
```

source-guard enable

Enables IP Source Guard (IPSG) on a port or a range of ports, per-port per-VLAN, or a VLAN or a range of VLANs.

Syntax

source-guard enable [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...

no source-guard enable [**ethernet** *unit/slot/port* **to** *unit/slot/port* | **ethernet** *unit/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...

Command Default

IPSG is disabled.

Parameters

ethernet *unit/slot/port*

Specifies the Ethernet interface and the interface ID in the unit/slot/port format.

to *unit/slot/port*

Specifies a range of Ethernet interfaces.

lag *lag-id*

Specifies the LAG virtual interface.

to *lag-id*

Specifies a range of LAG IDs.

Modes

Interface configuration mode

VLAN configuration mode

Usage Guidelines

You can enable IPSG on a range of ports within a given slot only. Enabling IPSG across multiple slots is not supported.

For Interface configuration mode, this command is supported only for Ethernet interfaces and VLAG interfaces.

If IPSG is configured for a specified port for a VLAN, it cannot be configured globally for the VLAN.

IPSG and ACLs are supported together on the same device, as long as they are not configured on the same port or VLAN. If IPSG is enabled for a port, at the VLAN or interface level, ACLs cannot be applied to inbound traffic on the port for the VLAN or interface using the **ip access-group** command. When IPSG is configured for a port at the VLAN or interface level, an error will occur if you attempt to apply an ACL to inbound traffic. To bind an IPSG ACL to an interface for incoming traffic, use the **ip sg-access-group** command. Refer to the **ip sg-access-group** command for more information.

The **no** form of the command disables IPSG on the specified interface.

Examples

The following example enables IPSG for interface Ethernet 1/1/4.

```
device# configure terminal
device(config)# interface ethernet 1/1/4
device(config-if-e10000-1/1/4)# source-guard enable
```

The following example enables IPSG on a range of ports in the same slot.

```
device# configure terminal
device(config)# interface ethernet 1/1/1
device(config-if-e10000-1/1/1)# interface ethernet 1/1/21 to 1/1/25
decice(config-mif-1/1/21-1/1/25)# source-guard enable
```

The following error message displays if you try to configure ports across multiple slots.

```
device(config)# interface ethernet 1/1/18 to 2/1/18
Error - cannot configure multi-ports on different slot
```

The following example configures IPSG on a range of ports on a VLAN.

```
device# configure terminal
device(config)# vlan 12
device(config-vlan-12)# untagged ethernet 1/1/5 to 1/1/8
device(config-vlan-12)# tagged ethernet 1/1/23 to 1/1/24
device(config-vlan-12)# source-guard enable ethernet 1/1/23 to 1/1/24
```

The following example configures IPSG on a single port on a VLAN.

```
device# configure terminal
device(config)# vlan 12
device(config-vlan-12)# untagged ethernet 1/1/5 to 1/1/8
device(config-vlan-12)# tagged ethernet 1/1/23 to 1/1/24
device(config-vlan-12)# source-guard enable ethernet 1/1/23
```

The following example configures IPSG on all ports on a VLAN.

```
device# configure terminal
device(config)# vlan 12
device(config-vlan-12)# untagged ethernet 1/1/5 to 1/1/8
device(config-vlan-12)# tagged ethernet 1/1/23 to 1/1/24
device(config-vlan-12)# source-guard enable
```

The following example configures IPSG on a range of ports on multiple VLANs.

```
device# configure terminal
device(config)# vlan 100 to 150
device(config-mvlan-100-150)# tagged ethernet 1/1/23 to 1/1/24
device(config-mvlan-100-150)# source-guard enable ethernet 1/1/23 to 1/1/24
```

The following example configures IPSG on all ports on multiple VLANs.

```
device# configure terminal
device(config)# vlan 151 to 200
device(config-mvlan-151-200)# tagged ethernet 1/1/23 to 1/1/24
device(config-mvlan-151-200)# source-guard enable
```

The following example configures IPSG for a LAG port for a VLAN.

```
device# configure terminal
device(config)# vlan 12
device(config-vlan-12)# tagged lag 9
device(config-vlan-12)# source-guard enable lag 9
```

History

Release version	Command history
08.0.40a	This command was modified to support enabling IPSG on a range of ports.
08.0.61	An example was added for configuring IP Source Guard on a VLAN.
08.0.80	Support was added for configuring this command on a range of VLANs.
08.0.95	This command was modified to remove support for VE interfaces and VLAN groups.

source-ip

Sets the source IP address of an ERSPAN mirror.

Syntax

source-ip *ip-addr*

no source-ip *ip-addr*

Command Default

A source IP is not configured for the ERSPAN profile.

Parameters

ip-addr

Specifies the IP address in the format A.B.C.D.

Modes

Monitor profile mode

Usage Guidelines

The source IP address can be any IP on the router.

The **no** form of the command removes the IP address from the monitor profile.

Examples

The following example sets the source IP address in ERSPAN profile 3.

```
device(config)# monitor-profile 3 type ERSPAN
device(config-monitor-profile 3)# source-ip 2.2.2.2
device(config-monitor-profile 3)# exit
```

History

Release version	Command history
08.0.40	This command was introduced.

spanning-tree

Configures STP on all ports on a device.

Syntax

spanning-tree [**single**] [**forward-delay** *seconds*] [**hello-time** *seconds*] [**max-age** *seconds*] [**priority** *number*]

no spanning-tree [**single**] [**forward-delay** *seconds*] [**hello-time** *seconds*] [**max-age** *seconds*] [**priority** *number*]

Command Default

STP is not enabled. Once STP is enabled, the STP port parameters are preconfigured with default values.

Parameters

single

Enables Single STP.

forward-delay *seconds*

Configures the time period a port waits before it forwards an RST BPDU after a topology change. This value ranges from 4 through 30 seconds. The default is 15 seconds.

hello-time *seconds*

Configures the time interval between two Hello packets. This value ranges from 1 through 10 seconds. The default is 2 seconds.

max-age *seconds*

Configures the time period the device waits to receive a Hello packet before it initiates a topology change. The time period ranges from 6 through 40 seconds. The default is 20 seconds.

priority *number*

Configures the priority of the bridge. The value ranges from 0 through 65535. A lower numerical value means the bridge has a higher priority. Thus, the highest priority is 0. The default is 32768.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

You can specify some or all of the parameters on the same command line.

The **single** option which configures a Single STP is available only in the global configuration mode.

The value of **max-age** must be greater than the value of **forward-delay** to ensure that the downstream bridges do not age out faster than the upstream bridges (those bridges that are closer to the root bridge).

Configuring the STP parameters is optional. All parameters have default values. Additionally, all values will be globally applied to all ports on the system or on the port-based VLAN for which they are defined.

The **no** form of the command disables STP.

Examples

The following example configures a Single STP.

```
device(config)# spanning-tree single
```

The following example configures the STP parameters.

```
device(config)# vlan 200
device(config-vlan-200)# spanning-tree forward-delay 4 hello-time 5 max-age 4 priority 20
```

spanning-tree (Ethernet, LAG)

Configures the Spanning Tree Protocol (STP) path and priority costs for an Ethernet port or Link Aggregation Group (LAG).

Syntax

spanning-tree [**single**][**ethernet***unit/slot/port*|**lag***lag-id*] {**disable**|**path-cost**{*number*|**auto**}|**priority***number*}

no spanning-tree [**single**][**ethernet***unit/slot/port*|**lag***lag-id*] {**disable**|**path-cost**{*number*|**auto**}|**priority***number*}

Command Default

The Ethernet port parameters are preconfigured with default values.

Parameters

single
Configures a single STP instance.

ethernet*unit/slot/port*
Specifies the Ethernet port to be configured.

lag*lag-id*
Specifies the LAG to be configured.

disable
Disables STP for the interface on the VLAN.

path-cost*number*
Configures the cost of the port path to the root bridge. The range when "short mode" is configured is from 1 through 65535. The range when "long mode" is configured is from 1 through 200000000.

path-costauto
Configures the cost of the port path to be the value set by the system software.

priority*number*
Sets the priority for the port. The priority value ranges from 0 through 240, in increments of 16. The default value is 128.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

The **single** keyword is available only in global configuration mode.

Configuring STP parameter values is optional. STP prefers the path with the lowest cost. All parameters have default values. Additionally, all values will be globally applied to all ports on the system or on the port-based VLAN for which they are defined.

The STP path cost calculation method depends on the 802.1D standard that is configured for the port. By default, the 802.1D 1998 standard is used for all ports running spanning tree. The 802.1D 2004 defined set of path costs allows for faster port speeds and is configured globally to ensure that all network bridges are running the same set of STP path costs.

The **no** form of the command disables STP on the Ethernet port.

Examples

The following example configures the STP path cost and priority for an Ethernet port.

```
device(config)# vlan 10
device(config-vlan-10)# spanning-tree ethernet 1/1/5 path-cost 15 priority 64
```

The following example configures the STP path cost when the 802.1D 2004 path cost method is configured.

```
device(config)# spanning-tree path-cost-method long
device(config)# vlan 10
device(config-vlan-10)# spanning-tree ethernet 1/1/6 path-cost 20000
```

History

Release version	Command history
08.0.61	This command was modified to include the LAG ID option.
08.0.70	This command was modified to allow path cost values from the IEEE 802.1D 2004 standards.

spanning-tree 802-1w

Configures the 802.1w parameters.

Syntax

spanning-tree 802-1w [**single**] [**force-version** *number*] [**forward-delay** *seconds*] [**hello-time** *seconds*] [**max-age** *seconds*] [**priority** *number*]

no spanning-tree 802-1w [**single**] [**force-version** *number*] [**forward-delay** *seconds*] [**hello-time** *seconds*] [**max-age** *seconds*] [**priority** *number*]

Interface configuration mode

spanning-tree 802-1w { **admin-edge-port** | **admin-pt2pt-mac**}

no spanning-tree 802-1w { **admin-edge-port** | **admin-pt2pt-mac**}

Command Default

The 802.1w port parameters are preconfigured with default values.

Parameters

single

Configures Single STP.

force-version *number*

Forces the bridge to send BPDUs in a specific format. 0 for STP compatibility mode and 2 for RSTP default mode.

forward-delay *seconds*

Configures the time period a port waits before it forwards an RST BPDU after a topology change. This value ranges from 4 through 30 seconds. The default is 15 seconds.

hello-time *seconds*

Configures the time interval between two Hello packets. This value ranges from 1 through 10 seconds. The default is 2 seconds.

max-age *seconds*

Configures the time period the device waits to receive a Hello packet before it initiates a topology change. The time period ranges from 6 through 40 seconds. The default is 20 seconds.

priority *number*

Configures the priority of the bridge. The value ranges from 0 through 65535. A lower numerical value means the bridge has a higher priority. Thus, the highest priority is 0. The default is 32768.

admin-edge-port

Configures the port to be an operational edge port for all VLANs.

admin-pt2pt-mac

Configures the port to be on a point-to-point link link for all VLANs.

Modes

Global configuration mode

VLAN configuration mode

Interface configuration mode

Usage Guidelines

The value of **max-age** must be greater than the value of **forward-delay** to ensure that the downstream bridges do not age out faster than the upstream bridges (those bridges that are closer to the root bridge).

Configuring the STP parameters is optional. All parameters have default values. Additionally, all values will be globally applied to all ports on the system or on the port-based VLAN for which they are defined.

The **no** form of the command sets the parameters to the default values.

This command has same function as **spanning-tree rstp**. From 08.0.92 release onwards, **spanning-tree rstp** is deprecated.

Examples

The following example shows how to configure the 802.1w parameters.

```
device(config)# vlan 200
device(config-vlan-200)# spanning-tree 802-1w force-version 6 forward-delay 5 hello-time 4 max-age 4
priority 5
```

spanning-tree 802-1w ethernet

Enables the spanning-tree 802.1w port commands on Ethernet ports.

Syntax

spanning-tree 802-1w [**single**] **ethernet** *stackid/slot/port* [**admin-edge-port**] [**admin-pt2pt-mac**] [**force-migration-check**] [**path-cost** *number*] [**priority** *number*] [**disable**]

no spanning-tree 802-1w [**single**] **ethernet** *stackid/slot/port* [**admin-edge-port**] [**admin-pt2pt-mac**] [**force-migration-check**] [**path-cost** *number*] [**priority** *number*] [**disable**]

Command Default

The 802.1w port parameters are pre-configured with default values.

Parameters

single
Configures a Single STP.

ethernet *stackid/slot/port*
Specifies the Ethernet port on which you want to configure the 802.1w parameters.

admin-edge-port
Enables the port as an edge port in the domain.

admin-pt2pt-mac
Enables a port that is connected to another port through a point-to-point link. The point-to-point link increases the speed of convergence. This parameter, however, does not auto-detect whether or not the link is a physical point-to-point link.

force-migration-check
Forces the specified port to sent one RST BPDU. If only STP BPDUs are received in response to the send RST BPDU, then the port will return to sending STP BPDUs.

path-cost *number*
Configures the cost of the port path to the root bridge. 802.1w prefers the path with the lowest cost. The path cost ranges is from 1 through 20,000,000.

priority *number*
Sets the priority for the port. The priority value ranges from 0 through 240, in increments of 16. The default value is 128.

disable
Disables 802.1w for the interface on the VLAN.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

Configuring the parameters is optional. All parameters have default values. Additionally, all values will be globally applied to all ports on the system or on the port-based VLAN for which they are defined.

The **no** form of the command disables the spanning tree on a VLAN

Examples

The following example shows the spanning tree configuration for the specified Ethernet port.

```
device(config)# vlan 200
device(config-vlan-200)# spanning-tree 802-1w ethernet 1/1/3 admin-edge-port admin-pt2pt-mac force-
migration-check path-cost 5 priority 10
```

spanning-tree designated-protect

Disallows the designated forwarding state on a port in STP 802.1d or 802.1w.

Syntax

spanning-tree designated-protect

no spanning-tree designated-protect

Command Default

STP (802.1d or 802.1w) can put a port into designated forwarding state.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of this command allows the designated forwarding state on a port in STP 802.1d or 802.1w. If STP tries to put a port into designated forwarding state, the device puts this port into the designated inconsistent STP state. This is effectively equivalent to the listening state in STP in which a port cannot forward any user traffic. When STP no longer marks this port as a designated port, the port is automatically removed from the designated inconsistent state.

NOTE
You use this command to enable Designated Protection at the port-level while the designated inconsistent state is a per-STP-instance, per-port state.

NOTE
You cannot enable Designated Protection and Root Guard on the same port.

Examples

The following example disallows the designated forwarding state on interface 1/1/1.

```
device(config)# ethernet interface 1/1/1
device(config-if-e1000-1/1/1)# spanning-tree designated-protect
```

History

Release version	Command history
07.3.00g	This command was introduced.

spanning-tree path-cost-method

Configures all ports running Spanning Tree Protocol (STP) to alter the path costs to match either the 802.1D 1998 path costs or the 802.1D 2004 path costs.

Syntax

spanning-tree path-cost-method [**long** | **short**]

no spanning-tree path-cost-method [**long** | **short**]

Command Default

The default path cost method is short (802.1D 1998 path costs).

Parameters

long

Configures all ports running STP to use the 802.1D 2004 path costs.

short

Configures all ports running STP to use the 802.1D 1998 path costs.

Modes

Global configuration mode

Usage Guidelines

The 802.1D 2004 defined set of path costs allows for faster port speeds and all network bridges must be running the same set of STP path costs.

The **no** form of the command returns all ports running STP to the default 802.1D 1998 path costs.

Examples

The following example configures all ports running STP to use the 802.1D 2004 path cost method for determining STP path costs.

```
device# configure terminal
device(config)# spanning-tree path-cost-method long
```

History

Release version	Command history
08.0.70	This command was introduced.

spanning-tree root-protect

Configures STP root guard.

Syntax

spanning-tree root-protect

no spanning-tree root-protect

Command Default

Root guard is disabled by default.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables STP root guard.

Examples

The following example shows how to enable RSTP on a port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# spanning-tree root-protect
```

spanning-tree rstp

Enables 802.1w Draft 3 in a port-based VLAN.

Syntax

spanning-tree [**single**] **rstp**

no spanning-tree [**single**] **rstp**

Command Default

RSTP is disabled by default.

Parameters

single

Configures single RSTP on the device.

Modes

Global configuration mode

VLAN configuration mode

Usage Guidelines

You must enter the command separately in each port-based VLAN in which you want to run 802.1w Draft 3.

This command does not enable STP. To enable STP, first enter the **spanning-tree** command without the **rstp** parameter. After you enable STP, enter the **spanning-tree rstp** command to enable 802.1w Draft 3.

The **no** form of the command disables RSTP.

Examples

The following example shows how to enable RSTP on a port.

```
device(config)# vlan 10
device(config-vlan-10)# spanning-tree rstp
```

History

Release version	Command history
08.0.92	This command was deprecated.

speed-duplex

Sets link speed and mode (full or half duplex, or slave or master).

Syntax

speed-duplex{ **10-full** | **10-half** | **100-full** | **100-half** | **1000-full** | **1000-full-master** | **1000-full-slave** | **10g-full** | | **10g-full-master** | **10g-full-slave** | **2500-full** | **2500-full-master** | **2500-full-slave** | **5g-full** | **5g-full-master** | **5g-full-slave** | **auto** }

no speed-duplex

Command Default

By default, the speed is auto-negotiated.

Parameters

10-full
10M, full duplex

10-half
10M, half duplex

100-full
100M, full duplex

100-half
100M, half duplex

1000-full
1G, full duplex

1000-full-master
1G, full duplex, master

1000-full-slave
1G, full duplex, slave

10g-full
10G, full duplex

10g-full-master
10G, full duplex, master

10g-full-slave
10G, full duplex, slave

2500-full
2.5G, full duplex

2500-full-master
2.5G, full duplex, master

2500-full-slave
2.5G, full duplex, slave

5g-full
5G, full duplex

5g-full-master
5g, full duplex, master

5g-full-slave
5g, full duplex, slave

auto
Auto-negotiation. This is the default.

Modes

Interface configuration mode

Usage Guidelines

The Gigabit Ethernet copper ports are designed to auto-sense and auto-negotiate the speed and duplex mode of the connected device. If the attached device does not support this operation, you can manually enter the port speed to operate at 10, 100, or 1000 Mbps. The default and recommended setting is **auto** (10/100/1000 auto-sense).

On FastIron devices, when setting the speed and duplex mode of an interface to 1000 Mbps full duplex, configure one side of the link as master (1000-full-master) and the other side as slave (1000-full-slave).

Both ends of the link must be configured to operate at the same speed.

2500 and the 5G speeds are applicable only to Multi-Gigabit ports.

The **no** form of the command restores the default.

Refer *RUCKUS FastIron Management Configuration Guide* for more information.

For the Ruckus ICX 7850-48F, SFP28 ports are grouped into fours. For example, ports 1/1/1 to 1/1/4 are one group and ports 1/1/5 to 1/1/8 are another group, and so on. All ports in a four-port group must be configured to the same value. This restriction does not apply if configuring values between 1G and 10G.

Examples

The following example changes the port speed of copper interface 1/1/8 on a device from the default of 10/100/1000 auto-sense, to 100 Mbps operating in full-duplex mode.

```
device(config)# interface ethernet 1/1/8
device(config-if-e1000-1/1/8)# speed-duplex 100-full
```

The following example changes the port speed of a four port group to 10 Mbps operating in full-duplex mode for an ICX 7850-48F device.

```
ICX-7850# configure terminal
ICX-7850(config)# interface ethernet 1/1/45 to 1/1/48
ICX-7850(config-if-e1000-1/1/8)# speed-duplex 10g-full
```

The following example configures a breakout port and changes the breakout port speed to 1Gbps. No reload is required.

```
ICX7550-48F# configure terminal
ICX7550-48F# breakout ethernet 1/1/11
ICX7550-48F# write memory
ICX7550-48F# reload


ICX7550-48F# configure terminal
ICX7550-48F#(config)# interface ethernet 1/1/1:2
ICX7550-48F(config-if-e25000-1/2/1:2)# speed-duplex 1000-full
ICX7550-48F(config-if-e25000-1/2/1:2)# gig-default neg-off
```

The following example unconfigures a breakout port that had a port speed set to 1Gbps. No reload is required.

```
ICX7550-48F# configure terminal
ICX7550-48F#(config)# interface ethernet 1/1/1:2
ICX7550-48F(config-if-e25000-1/2/1:2)#no gig-default neg-off
ICX7550-48F Router(config-if-e25000-1/2/1:2)#no speed-duplex
```

History

Release version	Command history
08.0.20	This command was introduced.
08.0.70	This command was modified to add support for 5G full-duplex mode on the ICX 7650.
09.0.10	This command was modified to add support for 1G full-duplex mode for breakout ports for ICX 7550 and ICX 7850 devices.

spt-threshold

Changes the number of packets the device receives using the RP before switching to the SPT.

Syntax

spt-threshold *num-of-packets*

no spt-threshold *num-of-packets*

Command Default

By default, the device switches from the RP to the SPT after receiving the first packet for a given IPv6 PIM Sparse group.

Parameters

num-of-packets

Specifies the number of packets as a 32-bit integer.

Modes

Router IPv6 PIM configuration mode

Usage Guidelines

Each IPv6 PIM Sparse router that is a DR for an IPv6 receiver calculates a short path tree (SPT) towards the source of the IPv6 multicast traffic. The first time the device configured as an IPv6 PIM router receives a packet for an IPv6 group, it sends the packet to the RP for that group, which in turn will forward it to all the intended DRs that have registered with the RP. The first time the device is a recipient, it receives a packet for an IPv6 group and evaluates the shortest path to the source and initiates a switchover to the SPT. Once the device starts receiving data on the SPT, the device proceeds to prune itself from the RPT.

You can change the number of packets the device receives using the RP before switching to using the SPT. If you enter a specific number of packets, the device does not switch over to using the SPT until it has sent the number of packets you specify using the RP.

The **no** form of the command resets the default behavior, that is, the device switches from the RP to the SPT after receiving the first packet for a given IPv6 PIM Sparse group. The device maintains a separate counter for each IPv6 PIM Sparse source-group pair.

Examples

The following example changes the number of packets the device receives using the RP before switching to the SPT.

```
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# spt-threshold 1000
```

The following example changes the number of packets the device receives using the RP before switching to the SPT for a specified VRF.

```
device(config)# ipv6 router pim vrf blue
device(config-ipv6-pim-router-vrf-blue)# spt-threshold 1000
```

ssh

Starts an SSH2 client connection to an SSH2 server using password authentication.

Syntax

ssh { *hostname* | *ipv4-address* } [**public-key** { **dsa** | **rsa** }] [*port-num*]

ssh ipv6 { *hostname* | *ipv6-address* } [**public-key** { **dsa** | **rsa** }] [**outgoing-interface** *type number*] [*port-num*]

Command Default

SSH2 client connection is not established.

Parameters

hostname
Specifies the host name of the SSH server.

ipv4-address
Specifies the IPv4 address of the SSH server.

public-key
Configures the type of public key authentication to use for the connection. If you do not enter this parameter, the default authentication type is password.

dsa
Specifies the public key authentication type as DSA.

rsa
Specifies the public key authentication type as RSA.

port-num
Specifies that the SSH2 connection will use a non-default SSH2 port. The default is 22.

ipv6
Identifies the remote IPv6 SSH server.

ipv6-address
Specifies the IPv6 address of the SSH server.

outgoing-interface
Configures the outgoing interface for Link-Local address.

type
Specifies the interface type.

number
Specifies the interface number. Use **?** to get the list of supported interfaces.

Modes

Privileged EXEC mode

Examples

The following example starts an SSH2 client connection to an SSH2 server using password authentication.

```
device# ssh 192.168.10.1
```

The following example starts an SSH2 client connection to an SSH2 server using public key authentication.

```
device# ssh ipv6 2001::1 public-key dsa
```

The following example starts an SSH2 client connection to an SSH2 server using public key authentication.

```
device# ssh ipv6 2001::1 public-key dsa outgoing-interface ethernet 1/1/1 26
```

ssm-enable

Globally enables source-specific multicast (SSM).

Syntax

ssm-enable [**range** { *group-address address-mask* | *acl-id* }]

no ssm-enable range { *group-address address-mask* | *acl-id* }

Command Default

SSM mode is disabled.

Parameters

range

Configures the IP multicast address range.

group-address address-mask

Specifies the IP multicast group address and network mask. If this is not configured, the range willdefault to 232/8 as assigned by the Internet Assigned Numbers Authority (IANA) for use with SSM

acl-id

Specifies the ACL number or name.

Modes

IPv4 PIM router configuration mode

IPV6 PIM router configuration mode

IPv4 PIM router configuration mode VRF configuration mode

IPv6 PIM router configuration modeVRF configuration mode

Usage Guidelines

PIM-SM must be enabled on any ports on which you want SSM to operate.

In the case of IPv4 PIM router configuration mode, the *address-range* can be specified in the format A.B.C.D P.Q.R. S where P.Q.R.S is the network mask or as A.B.C.D/L. If the address is not configured, the range will default to 232/8 as assigned by the Internet Assigned Numbers Authority (IANA) for use with SSM.

In the case of IPv6 PIM router configuration mode, the *address-range* can be specified in the format X:X::X:X/M. If the address is not configured, the address range will default to ff30:/12 as assigned by the Internet Assigned Numbers Authority (IANA) for use with SSM.

The **no** form of the command restores the default.

Examples

The following example enables SSM on an IPv6 PIM-SM-enabled port.

```
device# configure terminal
device(config)# ipv6 router pim
device(config-ipv6-pim-router)# ssm-enable
```

The following example enables SSM on an IPv4 PIM-SM-enabled port.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# ssm-enable
```

The following example configures a single SSM group IP address.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# ssm-enable range 10.1.1.1/8
```

The following example configures PIM so that it uses the group addresses allowed by ACL “xyz” as its PIM SSM range.

```
device# configure terminal
device(config)# router pim
device(config-pim-router)# ssm-enable range xyz
```

The following example enables SSM on an IP PIM-SM-enabled port for VRF red.

```
device# configure terminal
device(config)# router pim vrf red
device(config-pim-router-vrf-red)# ssm-enable range 10.1.1.1/9
```

stack disable

Prevents a device from joining a traditional stack and from listening for, or sending, stacking packets.

Syntax

stack disable

no stack disable

Command Default

Stacking is disabled by default.

Modes

Global configuration mode and Stack unit configuration mode

Usage Guidelines

To remove the restriction that prevents the unit from joining a stack, use the **no stack disable** command.

Examples

The following example disables the device from joining a stack.

```
device# configure terminal
device(config)# stack disable
Disable stacking. This unit will not be a part of any stack
```

History

Release version	Command history
08.0.00a	This command was introduced.

stack enable

Enables stack configuration on the device. Enter this command on the intended active controller.

Syntax

stack enable

no stack enable

Command Default

Stacking is not enabled on the device.

Modes

Global configuration mode

Stack unit configuration mode

Usage Guidelines

Use the **no** form of the command to remove stacking capability from the device.

NOTE
When you use the **no stack enable** command, the unit can still be called to join an active stack. To prevent this, use the **stack disable** command instead.
You must remove all configuration information from the port before issuing the **stack enable** command.

For manual configuration, the **stack enable** command must be issued on each device in the stack.

Examples

The following example enables stack configuration on the device.

```
device# config terminal
device(config)# stack enable
Enable stacking. This unit actively participates in stacking
```

History

Release version	Command history
08.0.00a	This command was introduced.

stack interactive-setup

Presents command options that you can select to discover new stack units or standalones and integrate them, with your confirmation, into the stacking system. Also offers the option to change the IDs of existing stack units.

Syntax

stack interactive-setup

Modes

Privileged EXEC mode

Usage Guidelines

Beginning with FastIron 08.0.90, the **stack interactive-setup** command replaces the **stack secure-setup** command.

The selection **Option 1: change stack unit IDs** allows you to change the ID of a stack unit, except for the active controller. You can change a unit ID to a used or an unused ID. If the ID is used, the system forces you to change the ID of the unit that already uses the ID. As a result, you can use this option to swap IDs or to change to new IDs. If the changed ID would cause the unit to become non-operational due to a module mismatch, the system displays a warning.

NOTE
An ID change requires a reload.

NOTE
The system does not change the configuration of a unit when its ID is changed. For example, if the ID for unit 2 is changed to be unit 3, the configuration of unit 2 ports does not change.

Both option 2 and option 3 can discover new links within the stack. Discovery can enlarge the stack-ports or stack-trunks or change a linear stack to a ring. If both new links within a stack and new units are discovered, you must handle the new links first. After handling the new links, enter the **stack interactive-setup** command again to handle the new units. Because new links result in new stack-ports or new stack-trunks that may affect the discovery of new units, the stack interactive-setup process must be executed twice.

For more information on using the **stack interactive-setup** command, refer to the *Ruckus FastIron Stacking Configuration Guide*.

Examples

The following example shows options available for the command.

```
device# stack interactive-setup
You can abort stack interactive-setup at any stage by <ctrl-c>
0: quit
1: change stack unit IDs
2: discover and convert new units (no startup-config flash) to members
3: discover and convert existing/new standalone units to members
2&3 can also find new links and auto-trunk or convert chain(s) to ring.
```

The following example uses **stack interactive-setup** option 2.

```
ICX7650-48ZP Router# stack interactive-setup
You can abort stack interactive-setup at any stage by <ctrl-c>
0: quit
1: change stack unit IDs
2: discover and convert new units (no startup-config flash) to members
3: discover and convert existing/new standalone units to members
2&3 can also find new links and auto-trunk or convert chain(s) to ring.
Please type your selection: 2
Probing topology to find clean units...
T=43m29.0: Sending probes to ports: u1: 1/3/1 to 1/3/2,
Existing stack: ============================================================

     +---+
  3/1| 1 |3/2
     +---+


Horizontal bars link to discovered units. Vertical bars link to stack units.


Chain #0: ==================================================================
#1: icx7650-48zp-port-management 609c.9f52.37ba
#2: icx7650-48zp-port-management 609c.9f52.b33e

     1/3/1        1/3/2
       |            |
       |            |
      3/1          3/1
     +---+        +---+
     |#1 |3/2--3/2|#2 |
     +---+        +---+

Discovered 1 chain/ring
Chain #0: Do you want to select this chain? (enter 'y' or 'n'): y
#1: icx7650-48zp-port 609c.9f52.37ba, type an ID (No: 0, default: 3):
#2: icx7650-48zp-port 609c.9f52.b33e, type an ID (No: 0, default: 2):

You selected 2 unit(s): #1: ID=3, #2: ID=2,

Links U1--U3, #=1: 3/1--3/1
Links U3--U2, #=1: 3/2--3/2
Links U2--U1, #=1: 3/1--3/2

                   #1           #2
     +---+        +---+        +---+
 -3/2| 1 |3/1--3/1| 3 |3/2--3/2| 2 |3/1-
 |   +---+        +---+        +---+   |
 |                                      |
 |--------------------------------------|
Proceeding will produce the above topology. Do you accept it? (enter 'y' or 'n'): y
stack interactive-setup discovers 2 unit(s) and sends stack-port/trunk to chain 0:
 #1 609c.9f52.37ba U3, D0: 3/1, D1: 3/2
 #2 609c.9f52.b33e U2, D0: 3/1, D1: 3/2

ICX7650-48ZP Router#T=46m57.3: Election, was alone --> active, ID=1, pri=128, 2U(1-2), A=u1, nbr#=0 1,
reason: u2: enable, ,
Detect stack member 2 POE capable
Debug: Jul 13 05:00:02 Detect stack unit 2 has different ssh rsahost key, will synchronize it
Debug: Jul 13 05:00:02 T=46m57.7: Synchronize webauth files to u2
2000 log entries of PoE Event Trace Log Buffer is allocated on unit 1 for unit 2
T:46m59.1: Done hot swap: active controller u1 sets u2 to Ready.
Stack unit 2 Power supply 1 is not present
PoE: Stack unit 2 Power supply 2 with 748000 mwatts capacity is up
T=46m59.8: Election, was active, no change, ID=1, pri=128, 2U(1-2), A=u1, nbr#=0 1, reason: u1: stk-po-
chg, ,
Debug: Jul 13 05:00:09
Config changed due to add/del units. Do write mem if you want to keep it
Debug: Jul 13 05:00:12 T=47m7.7: Synchronize ssh rsa host key to u2
T=47m11.1: Election, was active, no change, ID=1, pri=128, 3U(1-3), A=u1, nbr#=2 2, reason: u3:
```

```
enable, ,
T=47m13.7: Election, was active, no change, ID=1, pri=128, 3U(1-3), A=u1, nbr#=2 2, reason: u1: stk-po-
chg, ,
Detect stack member 3 POE capable
Debug: Jul 13 05:00:18 Detect stack unit 3 has different ssh rsahost key, will synchronize it
Debug: Jul 13 05:00:18 T=47m14.1: Synchronize webauth files to u3
2000 log entries of PoE Event Trace Log Buffer is allocated on unit 1 for unit 3
T:47m15.6: Done hot swap: active controller u1 sets u3 to Ready.
Debug: Jul 13 05:00:23
Config changed due to add/del units. Do write mem if you want to keep it
Stack unit 3 Power supply 1 is not present
PoE: Stack unit 3 Power supply 2 with 748000 mwatts capacity is up
Debug: Jul 13 05:00:28 T=47m24.1: Synchronize ssh rsa host key to u3
PoE Info: PoE module 1 of Unit 2 on ports 2/1/1 to 2/1/48 detected. Initializing....
PoE Info: PoE module 1 of Unit 2 initialization is done.
PoE Info: PoE module 1 of Unit 3 on ports 3/1/1 to 3/1/48 detected. Initializing....
PoE Info: PoE module 1 of Unit 3 initialization is done.
T=48m15.7: Assigned unit 2 to be standby
Debug: Jul 13 05:01:22 T=48m17.7: start running config sync to standby u2
Debug: Jul 13 05:01:23 T=48m18.8: Running config sync to standby u2 is complete

ICX7650-48ZP Router#
ICX7650-48ZP Router# show stack
T=55m8.9: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX7650-48ZP  active  609c.9f52.b52e 128 local   Ready
2  D ICX7650-48ZP  standby 609c.9f52.b33e   0 remote  Ready
3  D ICX7650-48ZP  member  609c.9f52.37ba   0 remote  Ready

    active       standby
     +---+        +---+        +---+
 -3/1| 1 |3/2--3/1| 2 |3/2--3/2| 3 |3/1-
  |   +---+        +---+        +---+   |
  |                                      |
  |--------------------------------------|
Standby u2 - protocols ready, can failover
Role history: N: standalone, A: active, S: standby, M: member
U1: N->A

Current stack management MAC is 609c.9f52.b52e
Stack ports are operating at 100G.
ICX7650-48ZP Router# write memory

 There is no startup config file, unable to save legacy config

Automatic copy to member units:  2  3
Flash Memory Write (8192 bytes per dot)
.
Copy Done.
ICX7650-48ZP Router#
```

History

Release version	Command history
08.0.90	This command was introduced.

stack mac

Manually configures a specific MAC address for a traditional stack.

Syntax

stack mac*mac-address*

no stack mac*mac-address*

Command Default

Beginning with FastIron release 08.0.20, when a stack is enabled or when hitless-failover occurs, a default stack MAC address is assigned if none is configured. In earlier releases, the stack assumed the MAC address of the active controller by default.

Parameters

mac-address

Specifies the MAC address to be used for the stack.

Modes

Active stack controller configuration mode

Usage Guidelines

Enter the **no** form of this command to revert to the use of the active controllers' MAC address.

The MAC address is a hexadecimal value entered in the format xxxx.xxxx.xxxx.

Examples

The following example configures the stack MAC address manually as d4c1.9e18.3731.

```
ICX7850-32Q Router# configure terminal
ICX7850-32Q Router(config)# stack mac d4c1.9e18.3731
ICX7850-32Q Router# show running-config
Current configuration:
!
ver 09.0.10a
!
stack unit 1
module 1 icx7850-32q-port-management-module
module 2 icx7800-100g-12port-1200g-module
module 3 icx7800-100g-8port-800g-module
stack-trunk ethernet 1/3/1 to 1/3/4
stack-trunk ethernet 1/3/5 to 1/3/8
stack unit 2
module 1 icx7850-48fs-port-management-module
module 2 icx7800-100g-8port-800g-module
stack-trunk ethernet 2/2/1 to 2/2/4
stack-trunk ethernet 2/2/5 to 2/2/8
stack enable
stack mac d4c1.9e18.3731
!
```

History

Release version	Command history
08.0.00a	This command was introduced.
08.0.20	Stack behavior was modified so that a default MAC address is assigned when the stack is enabled or when hitless failover occurs if no stack MAC address has been configured.

stack suggested-id

Specifies the preferred stack unit ID for a standalone device before it joins a stack.

Syntax

stack suggested-id *stack-unit*

no stack suggested-id *stack-unit*

Parameters

stack-unit

Specifies the numeric stack unit ID.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command removes the stack unit ID.

The **stack suggested-id** command is configured on a standalone device before it joins a stack and becomes a member. The command is not for the active controller. Because the active controller always keeps its bootup ID during stack formation, it does not use the suggested-id value.

The system attempts to assign a bootup ID of a device as its stack unit ID. However, due to timing issues or the possible unavailability of the bootup ID, a device might not get the stack unit ID that you want when the stack is formed. The optional **stack suggested-id** command allows you to specify the stack unit ID for member devices when you are configuring a traditional or mixed stack using the manual configuration method.

Examples

The following example sets the stack unit ID on a standalone device to 3.

```
device# configure terminal
device(config)# stack suggested-id 3
```

stack suppress-warning

Stops periodic output of background stack diagnostic reports.

Syntax

stack suppress-warning

no stack suppress-warning

Command Default

By default, background diagnostics are displayed periodically on the active stack controller.

Modes

Stack active controller configuration mode

Usage Guidelines

Use the **no** form of the command to restore periodic output of background diagnostic reports.

Examples

In the following example, background diagnostic reports are turned off for the stack.

```
Device# configure terminal
Device(config)# stack suppress-warning
```

stack switch-over

Switches active controllers without reloading the stack and without packet loss to services and protocols supported by hitless stacking.

Syntax

stack switch-over

Command Default

With FastIron release 08.0.20, the **stack switch-over** command is allowed by default. In earlier releases, hitless failover must first be enabled.

Modes

Global configuration mode on a stack controller

Usage Guidelines

Use the **stack switch-over** command before reloading or performing maintenance on the currently active controller. Hitless failover must be enabled for the command to be used; otherwise, an error message is issued.

The command cannot be used during stack election or during configuration of a multi-stack-trunk.

A standby controller must exist and must have learned stack protocols for the command to be used. The standby controller must have the same priority as the active controller for the command to be used.

More than 120 seconds must have passed since the previous switchover or failover for the command to be accepted.

Examples

The following example shows the **stack switch-over** command being entered and the resulting output. You must confirm the switch-over before it can take effect by entering **y** when prompted.

```
device# stack switch-over
Standby unit 8 will become active controller, and unit 1 will become standby
Are you sure? (enter 'y' or 'n'): y
Unit 1 is no longer the active controller
```

History

Release version	Command history
08.0.00a	This command was introduced.
08.0.20	Hitless failover is enabled by default. The **stack switch-over** command is allowed by default as a result.

stack unconfigure

Returns a stack member to its pre-stacking configuration or state.

Syntax

stack unconfigure [*stack-unit* | **all** | **me** | **clean**]

Parameters

stack-unit

Specifies the numerical ID of a stack member. This option is available on the active controller only.

all

Specifies all stack members. This option is available on the active controller only.

me

Specifies the stack member from which the command is executed. The command removes the unit from the stack and boots it up as a standalone. When the unit rejoins the stack, its standalone startup-config file is saved in a backup file. This option is available on stack member consoles only.

clean

Specifies that the startup configuration be removed from the unit on which the command is executed and that the unit be rebooted as a clean unit. This option is available on stack member consoles only.

Modes

Privileged EXEC mode

Usage Guidelines

When a stack unit that did not have an original startup configuration file is unconfigured, it becomes a clean unit. It is possible that this unit could automatically rejoin the stack if its module configuration matches the configuration of the active controller. To prevent this from happening accidentally, disconnect the unit to be unconfigured, and then issue the **stack unconfigure me** command on it.

Examples

In the following example, stack unit 3 is unconfigured in a traditional stack.

```
ICX8200-24P Router# show stack
T=21h33m16.8: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX8200-24P   active  c0c5.2082.c774 255 local   Ready
2  S ICX8200-24    standby c0c5.2082.cbca 128 remote  Ready
3  S ICX8200-48PF  member  c0c5.207e.9a80   0 remote  Ready

    active       standby
     +---+        +---+        +---+
     | 1 |2/1==2/1| 2 |2/3==2/3| 3 |
     +---+        +---+        +---+
Standby u2 - protocols ready, can failover
Current stack management MAC is c0c5.2082.c774

ICX8200-24P Router# stack unconfigure 3
Will recover pre-stacking startup config of this unit, and reset it. Are you sure? (enter 'y' or 'n'): y
Stack 3 deletes stack bootup flash and recover startup-config from .old

ICX8200-24P Router# show stack
T=21h33m59.0: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX8200-24P   active  c0c5.2082.c774 255 local   Ready
2  S ICX8200-24    standby c0c5.2082.cbca 128 remote  Ready
3  S ICX8200-48PF  member  0000.0000.0000   0 reserve

    active       standby
     +---+        +---+
     | 1 |2/1==2/1| 2 |2/3
     +---+        +---+
Will assign standby in 54 sec due to all ready

Standby u2 - protocols ready, can failover
Current stack management MAC is c0c5.2082.c774
```

History

Release	Command History
07.4.00	This command was introduced.
08.0.00a	The **mixed-stack** option was added. The **rollback** option was deprecated.

stack zero-touch-enable

Enables background zero-touch provisioning (ZTP) to form a stack system or to add new stack units without user intervention.

Syntax

stack zero-touch-enable

no stack zero-touch-enable

Command Default

Zero-touch provisioning for stacking is not enabled by default.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command disables stack zero-touch provisioning.

Stacking must be enabled with the **stack enable** command before you can enable stack zero-touch provisioning.

You must use the **write memory** command after running stack zero-touch provisioning to saved the learned configuration.

Ruckus recommends stack interactive-setup as the preferred method for discovering and configuring a stack because it alerts users to potential issues and available options and is therefore more flexible. Using stack zero-touch provisioning is the same as running stack interactive-setup option 2 and electing all proposed options.

Ruckus recommends that you disable stack zero-touch provisioning after all new units and connections are discovered. Keeping the utility enabled does no harm, but the probes that occur every three minutes add processing overhead.

History

Release version	Command history
08.0.90	This command was introduced.

stack-port

Configures a stacking port used to link between two units.

Syntax

stack-port ethernet *unit* / *slot* / *port*

no stack-port ethernet *unit* / *slot*/ *port*

Command Default

Both the default valid-stack-ports serve as stacking ports on a stack unit.

Parameters

ethernet
Specifies Ethernet as the interface type.

unit
Specifies the stack unit ID

slot
Specifies the slot or module on the unit where the interface resides.

port
Specifies the interface to be configured as the sole stack port on the unit.

Modes

Stack-unit configuration sub-mode

Usage Guidelines

The link created by the **stack-port** command is not a data port and cannot have any configuration. The stack-port must be in a valid-stack-port set. Every ICX stackable platform has one or more valid-stack-port sets that define the available stack-ports or stacking trunks.

If the port specified in the **stack-port** command belongs to a stack-trunk configuration, the command overwrites the stack-trunk configuration.

The **no** form of the command removes the stacking port. The **no stack-port** command must include in its syntax an exact match to an existing port.

The **stack-port** command must not be used on a live stack-trunk connection. Use the **multi-stack-port** command on a live stack.

From FastIron 08.0.90, the behavior of the **stack-port** command has been modified. The differences in behavior are significant. Refer to the *Ruckus FastIron Stacking Configuration Guide* for information on the differences between FastIron release 08.0.90 and earlier releases.

Examples

The following example configures port 3/2/1 as the only stacking port on stack unit 3.

```
device# configure terminal
device(config)# stack unit 3
device(config-unit-3)# stack-port ethernet 3/2/1
```

History

Release version	Command history
08.0.90	The behavior of this command was modified.
09.0.00	The command was modified to add the keyword **ethernet** before the port number.

stack-trunk

Configures a stack to form a trunk from contiguous links on one side of a stack connection.

Syntax

stack-trunk ethernet *port-list*

no stack-trunk ethernet *port-list*

Parameters

ethernet

Specifies Ethernet as the interface type.

port-list

A port range in the form *stack-unit/slot/port* **to** *stack-unit/slot/port*, a list of ports in the form *stack-unit/slot/port stack-unit/slot/port*, or a combination of ranges and ports.

Modes

Stack unit configuration sub-mode

Usage Guidelines

From FastIron release 08.0.90, the **stack-trunk** command has been modified to behave as described in this section. For more information on previous command behavior, refer to the *Ruckus FastIron Stacking Configuration Guide*

The first port of a stack-trunk must be in a valid-stack-port set. Every platform has one or more valid-stack-port sets that define what ports can be configured as stack-ports or stack-trunks.

A linear-topology trunk may allow two contiguous ranges of ports from two different modules.

If the **stack-trunk** command specifies a port in common with an existing stack-trunk or stack-port configuration, the **stack-trunk** command overwrites the existing configuration.

Use the **no** form of the command to remove the stack trunk configuration. The **no stack-trunk** and the **no stack-port** commands must include in command syntax an exact match to existing ports.

The **stack-trunk** command must be configured on the stack units on both ends of the trunk. Use this command in a new environment on the first deployment of a stack.

To enable the **stack-trunk** command, the primary port in the trunk must be a stacking port in a valid-stack-port set. The valid-stack-port sets are specific to each ICX model.

Adding stack-port or stack-trunk configuration may cause the removal of existing stack-port or stack-trunk configuration if the new configuration is not contained in the same valid-stack-port set.

For more information on valid-stack-port sets for each ICX device, refer to the *Ruckus FastIron Stacking Configuration Guide*.

Use the **multi-stack-trunk** command to change a live stack-port or stack-trunk connection. The **multi-stack-trunk** command changes both ends of the connection simultaneously to avoid breakage.

If adding stack-port or stack-trunk configuration will cause the removal of a live stacking port or stacking trunk, the command entry is denied.

Examples

The following example configures ports 1/2/3 and 1/2/4 as a stacking trunk on stack unit 1.

```
device# configure terminal
device(config)# stack unit 1
device(config-unit-1)# stack-trunk ethernet 1/2/3 to 1/2/4
```

History

Release version	Command history
08.0.90	Command behavior was modified as described.
09.0.00	The command was modified to include the keyword **ethernet** before the port number.

static-mac-address

Configures a static MAC address and assigns the address to the premium queue.

Syntax

static-mac-address *ethernet-mac-address* [**lag** *lag-id* | **ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**priority** *number*]

static-mac-address *ethernet-mac-address* [**lag** *lag-id* | **ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**priority** *number*]

static-mac-address *ethernet-mac-address* **drop**

no static-mac-address *ethernet-mac-address* **drop**

Command Default

By default, all MAC addresses are in the best-effort queue.

Parameters

ethernet-mac-address
: Specifies the MAC address of the Ethernet interface.

lag *lag-id*
: Specifies the LAG virtual interface.

ethernet *unit/slot/port*
: Specifies the Ethernet interface.

to
: Specifies the range of Ethernet ports.

priority *number*
: Configures a priority for the Ethernet MAC address. The values are from 0 through 7.

drop
: Specifies that packets to and from the designated Ethernet MAC address are to be dropped.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command clears the static MAC address configuration.

Examples

The following example configures a static MAC address on a range of Ethernet interfaces with priority 7.

```
device(config)# vlan 2
device(config-vlan-2)# static-mac-address 0000.0063.67ff ethernet 1/1/1 to 1/1/6 priority 7
```

The following example configures a VLAN to drop packets with a source or destination MAC address.

```
device(config)# vlan 2
device(config-vlan-2)# static-mac-address 0000.0063.67FF drop
```

History

Release version	Command history
08.0.61	This command was modified to add the LAG ID option.

static-mac-ip-mapping

Adds the client MAC address mapping to the IP address.

Syntax

static-mac-ip-mapping *ip-address mac-address*

no static-mac-ip-mapping *ip-address mac-address*

Parameters

ip-address

Specifies the IP address of the client to be used for mapping.

mac-address

Specifies the MAC address of the client to be used for mapping.

Modes

DHCP server pool configuration mode

Usage Guidelines

The **no** form of the command removes the client MAC address mapping from the IP address.

Examples

The following example adds the client MAC address mapping to the IP address.

```
device# configure terminal
device(config)# ip dhcp-server pool cabo
device(config-dhcp-cabo)# static-mac-ip-mapping 10.10.10.29 0010.9400.0005
```

History

Release version	Command history
08.0.30mb	This command was introduced.

store-and-forward

Resets the switching method for forwarding packets from cut-through to store-and-forward.

Syntax

store-and-forward

no store-and-forward

Command Default

The switching method is cut-through.

Modes

Global configuration mode

Usage Guidelines

Ethernet devices support two basic switching methods for packet forwarding: store-and-forward and cut-through.

NOTE
You must save the configuration and reload for the change to take effect.

A store-and-forward device does not make a forwarding decision on a data packet until it has received the whole frame and checked its integrity; a cut-through device starts the forwarding process soon after it makes the forwarding decision on an incoming frame that is, it might start forwarding before the entire packet is received. This reduces forwarding latency, especially for longer packets. However, there are many factors to consider when selecting which switching method is best for your environment and in some cases it is desirable to change from the default method and configure a device to store-and-forward.

The following table describes some of the differences in how packets are handled depending on the switching method.

Feature	Cut-through	Store-and-forward
Forwarding	Data forwarding starts before an entire packet is received	Device waits for entire packet received before processing.
Latency	Low latency, less than 1 micro second.	Higher latency; latency depends on frame size.
FCS Errors	FCS errors may be propagated from one device to another.	FCS errors are checked and error packets are discarded in the MAC receive.
MTU size	MTU size is validated by MAC receive. Oversize packets are marked as error packets but not dropped in the MAC receive.	MTU size is validated by MAC receive. Oversize packets are dropped at the MAC layer.

The **no** form of this command restores the default packet-forwarding method to cut-through.

Examples

This example globally enables **store-and-forward** packet switching and saves the configuration.

```
Device(config)# store-and-forward
Device(config)# write memory
Device(config)# end
```

History

Release version	Command history
08.0.10b	This command was introduced.

stp-bpdu-guard

Enables STP BPDU Guard on the Ethernet interfaces.

Syntax

stp-bpdu-guard

no stp-bpdu-guard

Command Default

STP BPDU Guard is disabled by default.

Modes

Interface configuration mode

Usage Guidelines

When a BPDU Guard-enabled port is disabled by BPDU Guard, the device places the port in the errdisable state and displays a message on the console indicating that the port is errdisabled.

The **no** form of the command disables the STP BPDU Guard on the Ethernet interfaces.

Examples

The following example shows how to enable the STP BPDU Guard on a port.

```
device(config)# interface ethernet 1/2/1
device(config-if-e1000-1/2/1)# stp-bpdu-guard
```

The following example shows how to enable the STP BPDU Guard on multiple ports.

```
device(config)# interface ethernet 1/1/1 to 1/1/9
device(config-mif-1/1/1-1/1/9)# stp-bpdu-guard
```

stp-group

Changes the CLI to the STP group configuration level.

Syntax

stp-group *group-id*

no stp-group *group-id*

Parameters

group-id

Specifies the STP group ID. The value ranges from 1 through 32.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command exits the STP group configuration level.

Examples

The following example shows how to change to the STP group configuration level.

```
device(config)# stp-group 1
device(config-stp-group-1)#
```

stp-protect

Prevents an end station from initiating or participating in STP topology changes.

Syntax

stp-protect

no stp-protect

Command Default

STP protection is disabled by default.

Modes

Interface configuration mode

Usage Guidelines

This command causes the port to drop STP BPDUs sent from the device on the other end of the link.

The **no** form of the command disables STP protection on the port.

Examples

The following example shows how to enable STP protection on a port.

```
device(config)# interface ethernet 1/1/2
device#(config-if-e1000-1/1/2)# stp-protect
```

subnet6 (DHCPv6)

Configures a subnet for a DHCPv6 server and accesses DHCPv6 subnet configuration mode.

Syntax

subnet6 *ipv6-prefix*

Command Default

A subnet is not configured.

Parameters

ipv6-prefix

Specifies the IPv6 prefix.

Modes

DHCPv6 server configuration mode

Usage Guidelines

To use this command, you must upgrade to FI 08.0.90 using the Unified FastIron Image (UFI). Refer to the **Software Upgrade and Downgrade** chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The **no** form of the command restores the default.

Examples

The following example configures a subnet for a DHCPv6 server and enters DHCPv6 subnet configuration mode.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# subnet6 3ffe:501:ffff:100::/64
device(config-dhcpv6-subnet)#
```

History

Release version	Command history
08.0.90	This command was introduced.

summary-address (OSPFv2)

Configures route summarization for redistributed routes for an Autonomous System Boundary Router (ASBR).

Syntax

summary-address *A.B.C.D E.F.G.H*

no summary-address

Command Default

Summary addresses are not configured.

Parameters

A.B.C.D E.F.G.H

IP address and mask for the summary route representing all the redistributed routes in dotted decimal format.

Modes

OSPF router configuration mode

OSPF VRF router configuration mode

Usage Guidelines

Use this command to configure an ASBR to advertise one external route as an aggregate for all redistributed routes that are covered by a specified address range. When you configure an address range, the range takes effect immediately. All the imported routes are summarized according to the configured address range. Imported routes that have already been advertised and that fall within the range are flushed out of the AS and a single route corresponding to the range is advertised.

If a route that falls within a configured address range is imported by the device, no action is taken if the device has already advertised the aggregate route; otherwise the device advertises the aggregate route. If an imported route that falls within a configured address range is removed by the device, no action is taken if there are other imported routes that fall within the same address range; otherwise the aggregate route is flushed.

The device sets the forwarding address of the aggregate route to 0 and sets the tag to 0. If you delete an address range, the advertised aggregate route is flushed and all imported routes that fall within the range are advertised individually. If an external link-state-database-overflow condition occurs, all aggregate routes and other external routes are flushed out of the AS. When the device exits the external LSDB overflow condition, all the imported routes are summarized according to the configured address ranges.This parameter affects only imported, type 5 external routes.

The no form of the command disables route summarization.

Examples

The following example configures a summary address of 10.1.0.0 with a mask of 10.255.0.0. Summary address 10.1.0.0, includes addresses 10.1.1.0, 10.1.2.0, 10.1.3.0, and so on. For all of these networks, only the address 10.1.0.0 is advertised in external LSAs:

```
device# configure terminal
device(config)# router ospf
device(config-ospf-router)# summary-address 10.1.0.0 10.255.0.0
```

ip tftp blocksize

Specifies the size of Trivial File Transfer Protocol (TFTP) blocks.

Syntax

ip tftp blocksize [*value*]

Parameters

value

Specifies the block size value, ranging from 512 through 8192 bytes.

Modes

Global configuration mode

Examples

The following example sets the TFTP block size to 8192 bytes.

```
device(config)# ip tftp blocksize 8192
```

History

Release Version	Command History
09.0.10	This command was introduced.

summary-address (OSPFv3)

Configures route summarization for redistributed routes for an Autonomous System Boundary Router (ASBR).

Syntax

summary-address *IPv6-addr/mask*

no summary-address

Command Default

Summary addresses are not configured.

Parameters

A:B:C:D/LEN

IPv6 address and mask for the summary route representing all the redistributed routes in dotted decimal format.

Modes

OSPFv3 router configuration mode

OSPFv3 VRF router configuration mode

Usage Guidelines

Use this command to configure an ASBR to advertise one external route as an aggregate for all redistributed routes that are covered by a specified IPv6 address range. When you configure an address range, the range takes effect immediately. All the imported routes are summarized according to the configured address range. Imported routes that have already been advertised and that fall within the range are flushed out of the AS and a single route corresponding to the range is advertised.

If a route that falls within a configured address range is imported by the device, no action is taken if the device has already advertised the aggregate route; otherwise the device advertises the aggregate route. If an imported route that falls within a configured address range is removed by the device, no action is taken if there are other imported routes that fall within the same address range; otherwise the aggregate route is flushed.

You can configure up to 32 address ranges.

The device sets the forwarding address of the aggregate route to 0 and sets the tag to 0. If you delete an address range, the advertised aggregate route is flushed and all imported routes that fall within the range are advertised individually. If an external link-state-database-overflow condition occurs, all aggregate routes and other external routes are flushed out of the AS. When the device exits the external LSDB overflow condition, all the imported routes are summarized according to the configured address ranges.

If you use redistribution filters in addition to address ranges, the device applies the redistribution filters to routes first, then applies them to the address ranges.

If you disable redistribution, all the aggregate routes are flushed, along with other imported routes.

This option affects only imported, type 5 external routes. A single type 5 LSA is generated and flooded throughout the AS for multiple external routes.

Examples

The following example configures a summary address of 2001:db8::/24 for routes redistributed into OSPFv3. The summary prefix 2001:db8::/24 includes addresses 2001:db8::/1 through 2001:db8::/24. Only the address 2001:db8::/24 is advertised in an external link-state advertisement.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# summary-address 2001:db8::/24
```

supportsave

Collects logs from different modules and uploads the logs into a remote SCP or TFTP server.

Syntax

supportsave [**add_cust_cmd** | **all** | **cancel** | **core** | **del_cust_cmd** | **info** | **infra** | **l2** | **l3** | **list_cust_cmd** | **os** | **platform** | **show** | **system**] [**scp** | **tftp**] [*ipv4-address*] [*server-path*] [*optional-tagname*]

Command Default

The supportsave functionality is not active.

Parameters

add_cust_cmd
Adds the given command at the given index in the custom commands list. If there is already a command present at the index passed, the add operation fails.

all
Sends all information to the remote server.

cancel
Cancels the **supportsave** command operation.

core
Sends core information to the remote server.

del_cust_cmd
Deletes the given command at the given index in the custom commands list. If there is already a command present at the index passed, the delete operation fails.

info
Displays information about the **supportsave** command. If **info** is enabled, the collected commands contain additional information such as BEGIN, CONTEXT, TIME STAMP, HW/SW INFO, and so on.

infra
Sends infrastructure information to the remote server.

l2
Sends Layer 2 information to the remote server.

l3
Sends Layer 3 information to the remote server.

list_cust_cmd
Displays the custom commands list.

os
Sends operating system (OS) information to the remote server.

platform
Sends platform information to the remote server.

show
Displays the percentage completed in the currently executing command process.

system
Sends system information to the remote server.

scp
Specifies the remote SCP server.

tftp
Specifies the remote TFTP server.

ipv4-address
Specifies the IP address for the remote server.

server-path
Specifies the file pathname for the remote server in ASCII text. The name can be up to 128 characters in length. The default is /.

optional-tagname
Appends a text string to the collected file name on the remote server.

NOTE
Not all parameters are supported for FastIron 09.0.0 but will be available in an upcoming patch release.

Modes

Privileged EXEC mode

Usage Guidelines

The collected logs are shared with the technical support personnel for investigating issues seen on the device. Once the **supportsave** command is run, logs are collected and uploaded into the remote server.

Parallel execution of the **supportsave** command from two different sessions is not allowed. Parallel execution of the **supportsave** command and the **copy tftp** or **copy scp** commands is not allowed.

When upgrading from FastIron 08.0.95c, it is recommended that you use the **supportsave** command and clear the core files before the upgrade.

The **supportsave** command supports IPv4.

A maximum of 32 commands can be added to the custom commands list. Commands are not expanded while adding a command to the custom commands list. It is recommended not to add any filters with the commands.

Modifying the custom commands list using **supportsave add_cust_cmd** or **supportsave del_cust_cmd** is not allowed while supportsave data collection is in progress.

Run time for the **supportsave** command depends on the commands present in the custom commands list and the distance of the remote server.

In order to avoid looping, the **supportsave** command cannot be added to the custom commands list. The commands that change the CLI mode (**exit**, **quit**) and the commands that restart the router (**switchover**, **reload**) are not accepted.

The tag string should be 10 characters or less. If more than 10 characters are entered, an error message: "File tag is longer than max(10) chars".

The **supportsave** command uses the outbound SSH session.

SCP or TFTP operations are not allowed while supportsave is in progress.

Cancelling the **supportsave** command during the file transfer does not cancel the current file transfer. While cancelling the **supportsave** command, you must wait for the current file transfer to complete before running the **supportsave** command again.

Supportsave is not High Availability (HA) aware.

The **supportsave** command aborts when the remote server is terminated. Additionally, when the data is collected from the remote unit, and if the corresponding unit is powered off, the **supportsave** command is terminated.

Use the **supportsave cancel** command to stop supportsave operations.

Examples

The following example collects Layer 3 information.

```
device# supportsave l3 scp 10.xx.xx.104
User name:root
Password:Supportsave started. This operation may take several minutes.
Press "Shift-A" to abort supportsave operation.
asethura#########################################################################
Connecting to remote host......

Sending data (8192 bytes per dot)
.

SCP transfer from device completed

Connection Closed

Supportsave completed in 1 seconds
```

The following example adds a custom command to the fifth position in the index.

```
device# supportsave add_cust_cmd index 5 "host-max-num 512"
```

The following example deletes a custom command from the fifth position in the index.

```
device# supportsave del_cust_cmd index 5
```

The following example sends all information to the default remote TFTP server.

```
device# supportsave all tftp 10.176.198.2 / CustTagNam
```

History

Release version	Command history
08.0.61	This command was introduced.
09.0.00	The command syntax was modified.

switch-over-active-role

Activates switchover of the active and standby management modules without any packet loss to the services and protocols that are supported by hitless management.

Syntax

switch-over-active-role

Command Default

Switchover is not enabled.

Modes

Privileged EXEC mode

Usage Guidelines

Hitless failover must be enabled before a hitless switchover can be executed.

If this command is entered when hitless failover is disabled, the following message will appear on the console:

```
Switch-over is not allowed. Reason: hitless-failover not configured.
```

NOTE
This command is supported only on FastIron SX devices.

Examples

The following example switches over to the standby module.

```
device# switch-over-active-role
Are you sure? (enter 'y' or 'n'): y
Running Config data has been changed. Do you want to continue
the switch-over without saving the running config? (enter 'y' or 'n'): n
Please save the running config and try switch-over again
```

symmetrical-flow-control enable

Enables symmetrical flow control (SFC) globally.

Syntax

symmetrical-flow-control enable[**all-priorities**]

no symmetrical-flow-control enable

Command Default

SFC is globally disabled.

Parameters

all-priorities

Specifies SFC on all priorities. If you do not specify the **all** keyword, SFC is enabled only on priorities from 0 through 4. This parameter is optional.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this restores the default flow-control settings.

Configuring the **symmetrical-flow-control enable** command enables SFC globally for priorities from 0 through 4 by default and optionally for all priorities from 0 through 7. Using **symmetrical-flow-control enable** command is recommended as this turns on SFC for priorities from 0 through 4 and does not impact other high priority queues.



CAUTION
Enabling SFC on all priorities is not recommended as it can cause network instability.

By default, the system runs in tail-drop mode, with all ports honoring 802.3x flow control and disabling 802.3x transmit. The **symmetrical-flow-control enable** command enables transmission of 802.3x pause frames.

Configuring the **symmetrical-flow-control enable** command changes priority-to-PG mapping.

You cannot configure the **symmetrical-flow-control enable** command if the **priority-flow-control** command is enabled.

If the **symmetrical-flow-control enable** command is not enabled, you cannot configure the **flow-control generate-only** or the **flow-control both** commands in interface configuration mode.

Examples

The following example enables SFC.

```
device# configure terminal
device(config)# symmetrical-flow-control enable
```

The following example enables all priorities to send the IEEE 802.3x pause.

```
device# configure terminal
device(config)# symmetrical-flow-control enable all-priorities
```

The following example enables SFC for generate-only mode.

```
device(config)# symmetrical-flow-control enable
device(config)# flow-control generate-only
```

The following example enables SFC for both honor and generate-only mode.

```
device(config)# symmetrical-flow-control enable
device(config)# flow-control both
```

History

Release version	Command history
08.0.10	This command was introduced.

system-max gre-tunnels

Allocates maximum number of GRE tunnels.

Syntax

system-max gre-tunnels *number*

no system-max gre-tunnels *number*

Command Default

Default number of GRE tunnels is 16.

Parameters

number

Specifies the number of GRE tunnels to allocate. Valid value are 16 to 64. The default value is 16.

Modes

Privileged EXEC mode

Usage Guidelines

This configuration determines the interface range that is supported for an interface tunnel. For example, if the system-max value is reduced, it is possible that the configured interfaces may be rejected after a system reload.

The **no** form of the command resets the number of GRE tunnels to 16.

Examples

The following example allocates 60 GRE tunnels.

```
device# system-max gre-tunnels 60
device(config)# write memory
device(config)# exit
device# reload
```

system-max igmp-snoop-group-addr

Sets the maximum number of Internet Group Management Protocol (IGMP) snooping group addresses on a device.

Syntax

system-max igmp-snoop-group-addr*num*

no system-max igmp-snoop-group-addr

Command Default

The default maximum number of IGMP group addresses is supported.

Parameters

num

Specifies the maximum number of IGMP snoop group addresses supported. The value ranges from 256 through 8192. The default maximum number of IGMP snooping group addresses is 4096.

Modes

Global configuration mode

Usage Guidelines

The configured number of IGMP snooping group addresses is the upper limit of an expandable database. Client memberships exceeding the group limit are not processed.

For ICX 8200, ICX 7850, and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

ICX 7650 switches support 8000 IGMP snooping group addresses.

The **no** form of this command restores the default maximum.

Examples

The following example sets the maximum number of IGMP snooping group addresses to 1600.

```
device# configure terminal
device(config)# system-max igmp-snoop-group-addr 1600
```

system-max igmp-snoop-mcache

Configures the maximum number of Internet Group Management Protocol (IGMP) snooping mcache entries supported on a device.

Syntax

system-max igmp-snoop-mcache*num*

no system-max igmp-snoop-mcache

Command Default

The default maximum number of IGMP snooping cache entries is supported.

Parameters

num

Specifies the maximum number of IGMP snooping mcache entries supported. The value ranges from 256 through 8192. The default maximum number of IGMP snooping mcache entries is 512.

Modes

Global configuration mode

Usage Guidelines

For ICX 8200, ICX 7850, and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

ICX 7650 switches support 8000 IGMP snooping mcache entries.

The **no** form of the command restores the default maximum number of IGMP snooping mcache entries.

Examples

The following example sets the maximum number of IGMP snooping mcache entries supported on the device to 2000.

```
device# configure terminal
device(config)# system-max igmp-snoop-mcache 2000
```

system-max ip-arp

Configures the maximum number of Address Resolution Protocol (ARP) table entries.

Syntax

system-max ip-arp*number*

no system-max ip-arp*number*

Parameters

number

Specifies the number of entries the ARP table can hold.

Modes

Global configuration mode

Usage Guidelines

You must save the configuration to the startup configuration file and reload the software after changing the ARP table size to place the change into effect.

This command configures the maximum number of total ARP entries that can be configured. This includes dynamic, static, and pending ARP entries.

When the maximum number of ARP table entries is changed, the maximum number of IP cache entries set to the same value.

The followong table outlines the supported ARP table size per platform.

TABLE 21 Supported ARP Table Size

Product	Default Table Size	**Maximum Table Size**
ICX 7550	4000	64000
ICX 7650	8192	64000
ICX 7850	8192	64000
ICX 8200	2048	8192

The **no** form of the command resets the number of allowable static ARP table entries to the default value.

Examples

The following example increases the maximum number of ARP table entries you can configure to 32000.

```
device# configure terminal
device(config)# system-max ip-arp 32000
device(config)# write memory
device(config)# end
device# reload
```

system-max ip-route

Increases the capacity of the IP route table.

Syntax

system-max ip-route*number*

no system-max ip-route*number*

Command Default

The default is 12000 for ICX 7650 devices.

Parameters

number

The maximum number of routes in the IP route table.

Modes

Global configuration mode

Usage Guidelines

For ICX 8200, ICX 7850, and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

The supported ranges and defaults for IP routes vary by platform:

Product	Default number of IP routes	**Supported range**
IICX 7650	98304	98304 to 131072

You must save the configuration and reload the software to place the system maximum change into effect.

The **no** form of the command resets the values to the default.

Examples

The following example increases the capacity of the IP route table:

```
device# configure terminal
device(config)# system-max ip-route 5000
device(config)# write memory
device(config)# exit
device# reload
```

system-max ip-route-default-vrf

Configures maximum IPv4 routes to be allocated for the default VRF instance.

Syntax

system-max ip-route-default-vrf*number*

no system-max ip-route-default-vrf*number*

Command Default

The default number of IPv4 routes to be allocated for the default VRF instance depends on the platform. Refer to the Usage Guidelines section.

Parameters

number

Specifies the number of IPv4 routes to be allocated for the default VRF instance. Refer to the Usage Guidelines section.

Modes

Global configuration mode

Usage Guidelines

The maximum, minimum, and default number of IPv4 routes to be allocated for the default VRF instance.

Platform	Minumum	Default	Maximum
ICX 7650	256	65536	131072
ICX 8200	1024	8192	16384

The **no** form of the command resets the number of IPv4 routes allocated for the default VRF instance to the default.

Examples

The following example sets the number of IPv4 routes for the default VRF instance as 13000.

```
device# configure terminal
device(config)# system-max ip-route-default-vrf 13000
device(config)# write memory
```

system-max ip-route-vrf

Configures default maximum IPv4 routes to be allocated per user-defined VRF.

Syntax

system-max ip-route-vrf *number*

no system-max ip-route-vrf *number*

Command Default

The default number of the maximum IPv4 routes to be allocated per uesr-defined VRF depends on the platform. Refer to the Usage Guidelines section.

Parameters

number

Specifies the number of maximum IPv4 routes to be allocated per uesr-defined VRF. Refer to the Usage Guidelines section.

Modes

Global configuration mode

Usage Guidelines

The maximum, minimum, and the default number of IPv4 routes to be allocated per user-defined VRF depends on the platform.

Platform	Minimum	Default	Maximum
ICX 7650	64	4096	131072
ICX 8200	128	512	16384

The **no** form of the command resets the number of maximum IPv4 routes to be allocated per user-defined VRF to the default.

Examples

The following example configures the number of IPv4 routes to be allocated per user-defined VRF as 1500.

```
device# configure terminal
device(config)# system-max ip-route-vrf 1500
device(config)# write memory
```

system-max ip-static-arp

Configures the maximum number of static Address Resolution Protocol (ARP) table entries.

Syntax

system-max ip-static-arp*number*

no system-max ip-static-arp*number*

Parameters

number

Specifies the number of entries the static ARP table can hold.

Modes

Global configuration mode

Usage Guidelines

You must save the configuration to the startup configuration file and reload the software after changing the static ARP table size to place the change into effect.

This command configures the maximum number of static ARP entries that can be configured. When increasing static ARP table size, you must ensure that the ARP table size is also increased. For example, if you configure the maximum number of static ARP table entries to 1000, you must configure the maximum number of ARP entries to be greater than 1000. Refer to the **system-max ip-arp** command for more information.

When the maximum number of ARP table entries is changed, the maximum number of IP cache entries set to the same value.

The following table outlines the supported static ARP table size per platform.

TABLE 22 Supported Static ARP Table Size

Product	Default Table Size	**Maximum Table Size**
ICX 7550	512	6000
ICX 7650	512	1024
ICX 7850	512	1024
ICX 8200	512	2048

The **no** form of the command resets the number of allowable entries in the static ARP table to the default value.

Examples

The following example increases the maximum number of static ARP table entries you can configure to 1000.

```
device# configure terminal
device(config)# system-max ip-static-arp 1000
device(config)# write memory
device(config)# end
device# reload
```

Related Commands

system-max ip-arp

system-max ip-subnet-port

Increases the number of IP subnet interfaces that can be configured on each port of the device.

Syntax

system-max ip-subnet-port *number*

no system-max ip-subnet-port *number*

Command Default

The default number of IP subnet interfaces is 24.

Parameters

number

Specifies the maximum number of IP subnets per port. The range is from 24 through 128. The default value is 24.

Modes

Global configuration mode

Usage Guidelines

You must save the configuration and reload the software to place the system maximum change into effect.

The **no** form of the command resets the value to the default.

Examples

The following example increases the capacity of the IP subnet interfaces.

```
device(config)# system-max ip-subnet-port 64
device(config)# write memory
device(config)# exit
device# reload
```

system-max ip-vrf

Configures maximum VRF instances supported by the software.

Syntax

system-max ip-vrf*number*

no system-max ip-vrf*number*

Command Default

The default number of VRF instances supported by the software depends on the platform. Refer to the Usage Guidelines section.

Parameters

number

Configures the number of VRF instances supported. Refer to the Usage Guidelines section.

Modes

Global configuration mode

Usage Guidelines

The range of maximum and minimum configurable VRF instance and the default values depends on the platform.

Platform	Minimum	Default	Maximum
ICX 7650	16	128	128
ICX 8200	4	16	16

The **no** form of the command resets the VRF instance to the default value.

Examples

The following example configures the maximum number of VRF instance as 20.

```
device(config)# system-max ip-vrf 20
device(config)# write memory
device(config)# end
```

system-max ip6-cache

Configures the maximum number of IPv6 cache entries.

Syntax

system-max ip6-cache *value*

no system-max ip6-cache *value*

Command Default

For ICX 7850 devices, the maximum number of IPv6 cache entries is 4096. For ICX 7550 devices, the maximum number of IPv6 cache entries is 5120.

Parameters

value

Specifies the maximum number of IPv6 cache entries. For ICX 7850 devices, valid values range from 1024 through 65536. The default is 4096. For ICX 7550 devices, valid values range from 68 through 8192. The default is 5120. For all other platforms, valid values range from 1024 through 2048. The default is 1024.

Modes

Global configuration mode

Usage Guidelines

For ICX 7850 and ICX 7550 devices, when the maximum number of ARP table entries is changed, the maximum number of IPv6 cache entries is set to the same value. Refer to the **system-max ip-arp** and the **system-max ip-static-arp** for more information.

The **no** form of the command removes the configured maximum number of IPv6 cache entries and restores the default.

Examples

The following example sets the maximum number of IPv6 cache entries to 5120 for an ICX 7850 device.

```
ICX7850# configure terminal
ICX7850(config)# system-max ip6-cache 5120
```

The following example sets the maximum number of IPv6 cache entries to 8192 for anICX 7550 device.

```
ICX7850# configure terminal
ICX7550(config)# system-max ip6-neighbor-cache 8192
```

History

Release version	Command history
08.0.95	The maximum number of IPv6 cache entries was enhanced for ICX 7850 devices. Support was introduced for ICX 7550 devices.

Related Commands

system-max ip-arp, system-max ip-static-arp

system-max ip6-neighbor

Configures the maximum number of IPv6 neighbors.

Syntax

system-max ip6-neighbor *max-num-of-neighbors*

no system-max ip6-neighbor *max-num-of-neighbors*

Command Default

For ICX 7850 devices, the default is 4096. For all other platforms, the default is 4096.

Parameters

max-num-of-neighbors

Specifies the maximum number of IPv6 neighbors. For ICX 7850 devices, valid values range from 2048 through 65536. The default is 4096. For ICX 7550 devices, valid values range from 2048 through 4096. The default is 4096. For all other platforms, valid vales range from 2048 through.4096. The default is 4096.

Modes

Global configuration mode

Usage Guidelines

After configuring the maximum number of IPv6 neighbors, you must use the **write-memory** and **reload** commands to place the change into effect.

When using the **forwarding-profile** command, if **profile3** is selected, it is recommended to configure the maximum number of IPv6 neighbors to 65536. Refer to the **forwarding-profile** command for more information.

The **no** form of the command removes the configured maximum number of IPv6 neighbors and restores the default.

Examples

The following example sets the maximum number of IPv6 neighbors to 65536 for an ICX 7850 device.

```
ICX7850# configure terminal
ICX7850(config)# system-max ip6-neighbor 65536
```

The following example sets the maximum number of IPv6 neighbors to 2048 for an ICX 7550 device.

```
ICX7550# configure terminal
ICX7550(config)# system-max ip6-neighbor 2048
```

History

Release version	Command history
08.0.95	This command was introduced.

system-max ip6-route

Configures maximum IPv6 routes, used to initialize hardware during system init.

Syntax

system-max ip6-route *number*

no system-max ip6-route *number*

Command Default

The default number of routes depends on the platform. Refer to the Usage Guidelines section.

Parameters

number

Specifies the number of IPv6 routes. Refer to the Usage Guidelines section.

Modes

Global configuration mode

Usage Guidelines

For ICX 8200, ICX 7850, and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

The maximum and minimum number of IPv6 routes that can be configured depends on the platform.

Platform	Minimum	Default	Maximum
IICX 7650	5120	5120	7168

The **no** form of the command resets the number of IPv6 routes to the default value.

Examples

The following example configures the number of IPv4 routes as 5000.

```
device# configure terminal
device(config)# system-max ip6-route 5000
device(config)# write memory
```

system-max ip6-route-default-vrf

Configures maximum IPv6 routes to be allocated for the default VRF instance.

Syntax

system-max ip6-route-default-vrf *number*

no system-max ip6-route-default-vrf *number*

Command Default

The default number of IPv6 routes to be allocated for the default VRF instance depends on the platform. Refer to the Usage Guidelines section.

Parameters

number

Specifies the number of IPv6 routes to be allocated for the default VRF instance. Refer to the Usage Guidelines section.

Modes

Global configuration mode

Usage Guidelines

The maximum, minimum, and default number of IPv6 routes to be allocated for the default VRF instance.

Platform	Minumum	Default	Maximum
ICX 7650	64	2048	7168
ICX 8200	43	1170	4096

The **no** form of the command resets the number of IPv6 routes allocated for the default VRF instance to the default.

Examples

The following example sets the number of IPv4 routes for the default VRF instance as 3000.

```
device# configure terminal
device(config)# system-max ip6-route-default-vrf 3000
device(config)# write memory
```

system-max ip6-route-vrf

Configures default maximum IPv6 routes to be allocated per user-defined VRF.

Syntax

system-max ip6-route-vrf*number*

no system-max ip6-route-vrf*number*

Command Default

The default number of the maximum IPv6 routes to be allocated per uesr-defined VRF depends on the platform. Refer to the Usage Guidelines section.

Parameters

number

Specifies the number of maximum IPv6 routes to be allocated per uesr-defined VRF. Refer to the Usage Guidelines section.

Modes

Global configuration mode

Usage Guidelines

The maximum, minimum, and the default number of IPv6 routes to be allocated per user-defined VRF depends on the platform.

Platform	Minimum	Default	Maximum
ICX 7650	16	1024	7168
ICX 8200	30	585	4096

The **no** form of the command resets the number of maximum IPv6 routes to be allocated per user-defined VRF to the default.

Examples

The following example configures the number of IPv6 routes to be allocated per user-defined VRF as 1500.

```
device(config)# system-max ip6-route-vrf 1500
device(config)# write memory
```

system-max mac-notification-buffer

Changes the value of the MAC-notification buffer.

Syntax

system-max mac-notification-buffer *size*

no system-max mac-notification-buffer *size*

Command Default

The default buffer size is 4000.

Parameters

size

Sets the buffer queue size to maintain MAC-notification events.

Modes

Global configuration

Usage Guidelines

The **no** form of the command sets the MAC-notification buffer to default size. The default buffer value is 4000, maximum value is 16000, and the allowed values are 4000, 8000 and 16000.

Examples

The following example changes the value of the MAC-notification buffer:

```
device(config)# system-max mac-notification-buffer 8000
```

The following example sets the MAC-notification buffer to default size:

```
device(config)# no system-max mac-notification-buffer 4000
```

History

Release version	Command history
08.0.10	This command was introduced.

system-max max-ip-mac

Changes the maximum number of MAC addresses that can be configured on IP interfaces.

Syntax

system-max max-ip-mac *number*

no system-max max-ip-mac *number*

Command Default

The default maximum of MAC addresses to be configured on IP interfaces is 120.

Parameters

number

The maximum number of MAC addresses to be configured on IP interfaces. The valid range is from 120 through 248. The default value is 120.

Modes

Global configuration mode

Usage Guidelines

Each physical or virtual Ethernet (VE) interface can be configured with only one MAC address. There is a maximum number of IP interfaces (248 on which an IP MAC address can be configured and the number of Virtual Router Redundancy Protocol (VRRP) virtual interfaces that can be supported simultaneously is affected by any increase over the default number of 120 interfaces. If the **system-max max-ip-mac** command is set above 120, a reduction in the number of IPv4 VRRP entries supported is calculated as <configured-value> - 120. For example, if the **system-max max-ip-mac** command is set to 130, the number of IPv4 VRRP entries is reduced by 10 entries (130-120).

You must save the configuration and reload the software before the changed maximum number takes effect.

The **no** form of the command resets the value to the default.

Examples

The following example increases the maximum number of MAC addresses that can be configured on IP interfaces.

```
device# configure terminal
device(config)# system-max max-ip-mac 140
Total IP-MAC entries supported is changed to 140
 Total VRRP instances supported changed to 370, IPv4 VRRP instances: 228, IPv6 VRRP instances 120
Reload required.  Please write memory and then reload or power cycle.
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
08.0.40	This command was introduced.

system-max mld-snoop-group-addr

Sets the maximum number of Multicast Listening Discovery (MLD) snooping group addresses on a device.

Syntax

system-max mld-snoop-group-addr*num*

no system-max mld-snoop-group-addr

Command Default

The default maximum number of MLD snooping group addresses is supported.

Parameters

num

Specifies the maximum number of MLD snooping group addresses supported. For ICX 7650 devices, valid values range from 256 through 8000. The default maximum number of MLD snooping group addresses is 4096.

Modes

Global configuration mode

Usage Guidelines

For ICX 8200, ICX 7850, and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

The configured number of MLD snooping group addresses is the upper limit of an expandable database. Client memberships exceeding the group limit are not processed.

The **no** form of the command restores the default maximum number of MLD snooping group addresses.

Examples

The following example sets the maximum number of MLD snooping group addresses to 4000.

```
device# configure terminal
device(config)# system-max mld-snoop-group-addr 4000
```

system-max mld-snoop-mcache

Sets the maximum number of Multicast Listening Discovery (MLD) snooping mcache entries supported on a device.

Syntax

system-max mld-snoop-mcache*num*

no system-max mld-snoop-mcache

Command Default

The default maximum number of MLD snooping mcache entries is supported.

Parameters

num

Specifies the maximum number of MLD snooping mcache entries supported. For ICX 7650 devices, valid values range from 256 through 8000. The default is 512.

Modes

Global configuration mode

Usage Guidelines

For ICX 8200, ICX 7850, and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

The **no** form of the command restores the default maximum number of MLD snooping mcache entries.

Examples

The following example shows how to set the maximum number of MLD snooping mcache entries to 8000.

```
device# configure terminal
device(config)# system-max mld-snoop-mcache 8000
```

system-max msdp-sa-cache

Configures the maximum number of source active (SA) messages n the Multicast Source Discovery Protocol (MSDP) cache.

Syntax

system-max msdp-sa-cache *num*

no system-max msdp-sa-cache *num*

Command Default

4096 MSDP SA messages are supported.

Parameters

num

Specifies the maximum number of MSDP SA messages supported. The range is 1024 to 8192. The default is 4096 messages.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command restores the default maximum.

Examples

The following example sets the maximum number of MSDP SA messages to 6000.

```
device(config)# system-max msdp-sa-cache 6000
```

system-max openflow-flow-entries

Configures the openflow flow table entries limit in the flow table.

Syntax

system-max openflow-flow-entries *number*

Command Default

The system-max openflow-flow-entries is enabled. The default value is 3072 flow table entries.

Parameters

number

Specifies a value from 0 to 12288.

Modes

Global configuration mode

Examples

The following example configures openflow flow table entries limit in the flow table.

```
device# configure terminal
device(config)# system-max openflow-flow-entries 304
```

History

Release	Command History
08.0.30	This command was introduced.

system-max openflow-pvlan-entries

Configures the CAM size of openflow protected VLAN entries for the device.

Syntax

system-max openflow-pvlan-entries *number*

Command Default

The system-max openflow-pvlan-entries is enabled. The default value is 40.

Parameters

number

Specifies a value from 0 to 40.

Modes

Global configuration mode

Examples

The following example configures system-max openflow-pvlan-entries

```
device# configure terminal
device(config)# system-max openflow-pvlan-entries 30
```

History

Release	Command History
08.0.30	This command was introduced.

system-max openflow-unprotectedvlan-entries

Configures the CAM size of openflow unprotected VLAN entries for the device.

Syntax

system-max openflow-unprotectedvlan-entries *number*

Command Default

The system-max openflow-unprotectedvlan-entries is enabled. The default value is 40.

Parameters

number

Specifies a value from 0 to 40.

Modes

Global configuration mode

Examples

The following example configures system-max openflow-unprotected-entries

```
device# configure terminal
device(config)# system-max openflow-unprotectedvlan-entries 30
```

History

Release	Command History
08.0.30	This command was introduced.

system-max pim-hw-mcache

Sets the maximum number of SG entries allowed in the device.

Syntax

system-max pim-hw-mcache *num*

no system-max pim-hw-mcache *num*

Command Default

1024 SG entries are supported.

Parameters

num

Specifies the maximum number of entries. The range is 256 to 6144; the default is 1024.

Modes

Global configuration mode

Usage Guidelines

For ICX 7850 and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

The **system max pim-hw-mcache** command replaces the **system-max pim mcache** command.

The **no** form of the command restores the default maximum.

Examples

The following example sets the maximum number of SG entries allowed in the device to 900.

```
device# configure terminal
device(config)# system-max pim-hw-mcache 900
```

system-max pim6-hw-mcache

Sets the maximum number of SG entries allowed in the device.

Syntax

system-max pim6-hw-mcache *num*

no system-max pim6-hw-mcache *num*

Command Default

512 SG entries are supported.

Parameters

num

Specifies the maximum number of entries. The range is 256 to 1024; the default is 512.

Modes

Global configuration mode

Usage Guidelines

You can use the **max-mcache** command to define the maximum number of repeated PIM traffic sent from the same source address and received by the same destination address.

For ICX 7850 and ICX 7550 devices, values are used from the forwarding profile and there is no option to change these values. When a new profile is selected, the values from the new profile are applied. Refer to the **forwarding-profile** command for more information.

The **no** form of the command restores the default maximum.

Examples

The following example sets the maximum number of SG entries allowed in the device to 900.

```
device# configure terminal
device(config)# system-max pim6-hw-mcache 900
```

system-max pms-global-pool

Configures the maximum number of global resources shared among all interfaces on the device to store secure MAC addresses for port MAC security (PMS).

Syntax

system-max pms-global-pool *num*

no system-max pms-global-pool *num*

Command Default

8192 global resources

Parameters

num

Specifies the number of global resources shared among all interfaces on the device to store secure MAC addresses for PMS. Valid values range from 1 through 8192.

Modes

Global configuration mode

Usage Guidelines

The global resources are in addition to the local resources allocated to each interface . The maximum number of MAC addresses any single interface can secure is 64 (the maximum number of local resources allocated to the interface), plus the number of global resources not allocated to other interfaces. Global resources are shared among all the interfaces on a first-come, first-served basis.

The **no** form of the command removes the configured number of global resources and resets the maximum value to the default.

Examples

The following example sets the maximum number of shared global resource to 800.

```
device# configure terminal
device(config)# system-max pms-global-pool 800
```

History

Release version	Command history
08.0.70	This command was introduced.

system-max rmon-entries

Configures the maximum number of entries allowed in the RMON control table.

Syntax

system-max rmon-entries *value*

no system-max rmon-entries *value*

Command Default

The default number of RMON entries allowed in the RMON control table is 128.

Parameters

value

Specifies the maximum number of entries. Valid values range from 128 to 256.

Modes

Global configuration mode

Usage Guidelines

This command configures the maximum number of entries allowed in the RMON control table, including alarms, history, and events.

NOTE
In order for the change to take effect, you must save the change to the startup-config file and reload or reboot.

The **no** form of the command resets the maximum number of entries allowed in the RMON table to the default value.

Examples

The following example sets the maximum number of RMON entries to 256.

```
device# configure terminal
device(config)# system-max rmon-entries 256
device(config)# write memory
device(config)# exit
device# reload
```

History

Release version	Command history
09.0.00	The command was deprecated.
09.0.10c	Support for the command was restored.
10.0.00	The maximum number of entries is 256.

system-max spanning-tree

Configures the system maximum value for the number of spanning tree instances.

Syntax

system-max spanning-tree *number*

no system-max spanning-tree *number*

Command Default

The default number of spanning tree instances is 32.

Parameters

number

Configures the number of spanning tree instances. The range is from 1 through 254.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the system maximum value of spanning tree instances to the default.

Examples

The following example shows how to set the maximum number of spanning tree instances.

```
device(config)# system-max spanning-tree 254
```

system-max virtual-interface

Increases the maximum number of virtual routing interfaces you can configure.

Syntax

system-max virtual-interface *num*

no system-max virtual-interface *num*

Command Default

The default maximum number of virtual interfaces that can be configured is 255.

Parameters

num

Specifies the maximum number of the virtual routing interface that can be configured. The range depends on the device being configured.

Modes

Global configuration mode

Usage Guidelines

The number of virtual routing interfaces supported on your product depends on the device and, for chassis devices, the amount of DRAM on the management module. The **write memory** command must be executed to save the changes and a reload is required.

The **no** form of the command removes the configured maximum number of virtual routing interfaces and resets the maximum value to the default.

Examples

The following example shows how to increase the maximum number of virtual routing interfaces.

```
device(config)# system-max virtual-interface 512
device(config)# write memory
device(config)# end
device# reload
```

system-max vlan

Increases the maximum number of VLANs you can configure.

Syntax

system-max vlan*num*

no system-max vlan *num*

Command Default

The default maximum value is 64 VLANs.

Parameters

num

Specifies the maximum number of VLANs you can configure. The range depends on the device being configured.

Modes

Global configuration mode

Usage Guidelines

Although you can specify up to 4095 VLANs, you can configure only 4094 VLANs. VLAN ID 4094 is reserved for use by Single STP. The **write memory** command must be executed to save the changes and a reload is required. The number of VLANs supported on your product depends on the device and, for chassis devices, the amount of DRAM on the management module.

A minimum value of 5 must be configured when configuring system-max value.

The **no** form of the command removes the maximum number of VLANs and reverts to the default value.

Examples

The following example shows how to increase the maximum number of VLANs.

```
device(config)# system-max vlan 2048
device(config)# write memory
device(config)# end
device# reload
```

table-map

Maps external entry attributes into the BGP routing table, ensuring that those attributes are preserved after being redistributed into OSPF.

Syntax

table-map *string*

no table-map *string*

Parameters

string

Specifies a route map to be whose attributes are to be preserved. Range is from 1 through 63 ASCII characters.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

BGP address-family IPv4 unicast VRF configuration mode

BGP address-family IPv6 unicast VRF configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

Use this command only to set the tag values. Normally, a route map is applied on routes (and therefore the routes are updated) before it is stored in the BGP routing table. Use the **table-map** command to begin the update before the routes are stored in the IP routing table.

Configurations made by this command apply to all peers.

Route maps that contain **set** statements change values in routes when the routes are accepted by the route map. For inbound route maps (route maps that filter routes received from neighbors), the routes are changed before they enter the BGP4 routing table. For tag values, if you do not want the value to change until a route enters the IP routing table, you can use a table map to change the value. A table map is a route map that you have associated with the IP routing table. The device applies the **set** statements for tag values in the table map to routes before adding them to the routing table. To configure a table map, you first configure the route map, then identify it as a table map. The table map does not require separate configuration. You can have only one table map.

NOTE
Use table maps only for setting the tag value. Do not use table maps to set other attributes. To set other route attributes, use route maps or filters. To create a route map and identify it as a table map, enter commands such those shown in the first of the following examples. These commands create a route map that uses an address filter. For routes that match the IP prefix list filter, the route map changes the tag value to 100 and is then considered as a table map. This route map is applied only to routes that the device places in the IP routing table. The route map is not applied to all routes. The first of the following examples below assumes that IP prefix list p11 has already been configured.

The **no** form of the command removes the table map.

Examples

The following example illustrates the execution of the **table-map** command.

```
device# configure terminal
device(config)# route-map tag_ip permit 1
device(config-route-map tag_ip)# match ip address prefix-list p11
device(config-route-map tag_ip)# set tag 100
device(config-route-map tag_ip)# exit
device(config)# router bgp
device(config-bgp-router)# table-map tag_ip
```

The following example removes a table map in the IPv6 address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# no table-map tag_ip
```

tacacs-server deadtime

Configures the duration for which the device waits for the primary authentication server to reply before deciding the TACACS server is dead and trying to authenticate using the next server.

Syntax

tacacs-server deadtime *time*

no tacacs-server deadtime *time*

Command Default

The default duration is three seconds.

Parameters

time

The time in seconds. The valid values are from 1 through 5. The default is 3.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the duration for which the device waits for a reply before deciding that the server is dead.

Examples

The following example configures the dead time as four seconds.

```
device(config)# tacacs-server deadtime 4
```

tacacs-server host

Configures the TACACS/TACACS+ server host to authenticate access to a device.

Syntax

tacacs-server host { *ipv4-address* | *host-name* | *ipv6-address* } [**auth-port** *port-num* [**authentication-only** | **authorization-only** | **accounting-only** | **default**]] [**key** *key-string*]

no tacacs-server host { *ipv4-address* | *host-name* | *ipv6-address* } [**auth-port** *port-num* [**authentication-only** | **authorization-only** | **accounting-only** | **default**]] [**key** *key-string*]

Command Default

The TACACS server host is not configured.

Parameters

ipv4-address
: Configures the IPv4 address of the TACACS server.

host-name
: Configures the host name of the TACACS server.

ipv6-address
: Configures the IPv6 address of the TACACS server.

auth-port *port-num*
: Configures the authentication port. The default value is 1812.

default
: Configures the server to be used for any AAA operation. Supported for TACACS+ only.

accounting-only
: Configures the server to be used only for accounting. Supported for TACACS+ only.

authentication-only
: Configures the server to be used only for authentication. Supported for TACACS+ only.

authorization-only
: Configures the server to be used only for authorization. Supported for TACACS+ only.

key *key-string*
: Configures the TACACS key for the server. Supported for TACACS+ only.

Modes

Global configuration mode

Usage Guidelines

You can specify up to eight servers. If you add multiple TACACS or TACACS+ authentication servers to the device, the device tries to reach them in the order you add them. You can designate a server to handle a specific AAA task. For example, you can designate one TACACS+ server to handle authorization and another TACACS+ server to handle accounting. You can set the TACACS key for each server.

The **tacacs-server key** command and the **tacacas-sever host key** parameter apply only to TACACS+ servers, not to TACACS servers. If you are configuring TACACS, do not configure a key on the TACACS server and do not enter a key on the Ruckus device.

The **no** form of this command removes the configuration.

Examples

The following example shows how to configure a TACACS server to authenticate access to a device.

```
device# configure terminal
device(config)# tacacs-server host 192.168.10.1
```

The following example shows how to specify different TACACS servers for authentication, authorization, and accounting.

```
device# configure terminal
device(config)# tacacs-server host 10.2.3.4 auth-port 1800 default key abc
device(config)# tacacs-server host 10.2.3.5 auth-port 1800 authentication-only key def
device(config)# tacacs-server host 10.2.3.6 auth-port 1800 authorization-only key def
device(config)# tacacs-server host 10.2.3.7 auth-port 1800 accounting-only key ghi
```

tacacs-server key

Configures the value that the device sends to the TACACS server when trying to authenticate user access.

Syntax

tacacs-server key *key-string*

no tacacs-server key *key-string*

Command Default

The TACACS server key is not configured.

Parameters

key-string

Specifies the key as an ASCII string. The value for the key parameter on the device should match the one configured on the TACACS server. The key can be from 1 to 32 characters in length and cannot include any space characters.

Modes

Global configuration mode

Usage Guidelines

The **tacacs-server key** command is used to encrypt TACACS+ packets before they are sent over the network.

The **tacacs-server key** command applies only to TACACS+ servers, not to TACACS servers. If you are configuring TACACS, do not configure a key on the TACACS server and do not enter a key on the Ruckus device.

The **no** form of the command removes the TACACS+ server key configuration.

Examples

The following example shows how to configure a TACACS+ server key.

```
device(config)# tacacs-server key abc
```

tacacs-server retransmit

Configures the maximum number of retransmission attempts for a request when a TACACS authentication request times out.

Syntax

tacacs-server retransmit *number*

no tacacs-server retransmit *number*

Command Default

The default number of retries is three.

Parameters

number

The maximum number of retries that the software retransmits the request. The valid values are from 1 through 5. The default is 3.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command resets the maximum number of retransmission attempts to the default.

Examples

The following example shows how to set the maximum number of retransmission attempts to four.

```
device(config)# tacacs-server retransmission 4
```

tacacs-server timeout

Configures the number of seconds the device waits for a response from a TACACS server before either retrying the authentication request or determining that the TACACS servers are unavailable and moving on to the next authentication method in the authentication method list.

Syntax

tacacs-server timeout *time*

no tacacs-server timeout *time*

Command Default

The default timeout value is three seconds.

Parameters

time

The time in seconds. Valid values are from 1 through 15 seconds. The default is 3.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command sets the timeout value to the default.

Examples

The following example shows how to set the TACACS server timeout value to 10 seconds.

```
device(config)# tacacs-server timeout 10
```

tag-profile

Configures or changes the tag profile for 802.1ad tagging.

Syntax

tag-profile*tag-number*

no tag-profile*tag-number*

Command Default

The default tag number is 0x8100.

Parameters

tag-number

Specifies the number of the tag. For ICX 8200 devices, the number will be between 0 and 0xfffe. For all other devices, the number will be between 0 and 0xffff.

Modes

Global configuration mode

Usage Guidelines

Tag profiles on a single port, or a group of ports, can be configured to point to the global tag profile.

The **no** command removes the tag profile configuration.

Examples

The following example shows how to configure the tag profile.

```
device(config)# tag-profile 9500
```

tag-profile enable

Directs the individual ports or a range of ports to the tag profile.

Syntax

tag-profile enable

no tag-profile enable

Command Default

The tag profile is not enabled.

Modes

Interface configuration mode

Usage Guidelines

Tag profiles on a single port, or a group of ports, can be configured to point to the global tag profile.

The tag type and tag profile cannot be configured at the same time.

The **no** form of the command disables the tag profile for ports.

Examples

The following example shows how to enable tag profile for a single port.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# tag-profile enable
```

The following example shows how to enable tag profile for multiple ports.

```
device(config)# interface ethernet 1/1/1 ethernet 1/2/1
device(config-mif-1/1/1,1/2/1)# tag-profile enable
```

tagged ethernet

Tags a port to allow communication among the different VLANs to which the port is assigned.

Syntax

tagged ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]

no tagged ethernet *stackid/slot/port* [**to** *stackid/slot/port* | [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*] [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*]...]

Parameters

ethernet *stackid/slot/port*

Specifies the Ethernet interface to configure as a tagged port.

to *stackid/slot/port*

Specifies a range of Ethernet interfaces.

Modes

VLAN configuration mode

Usage Guidelines

Tagging does not apply to the default VLAN. The ports are defined as either tagged or untagged at the VLAN level.

The **no** form of the command removes the tagging of the Ethernet ports.

Examples

The following example tags the port 1/1/9 to VLAN 4.

```
device# configure terminal
device(config)# vlan 4
device(config-vlan-4)# tagged ethernet 1/1/9
```

The following example tags the port 1/12 to a RSPAN (Remote Switched Port Analyzer) VLAN.

```
device# configure terminal
device(config)# rspan-vlan 4000
device(config-rspan-vlan)# tagged ethernet 1/1/2
device(config-rspan-vlan)# rspan destination ethernet 1/1/2
```

History

Release version	Command history
08.0.80	This command was modified to add support for RSPAN configuration mode.

tagged lag

Tags LAG virtual interfaces to allow communication among the different VLANs to which the LAG virtual interface is assigned.

Syntax

tagged lag *lag-id* [**to** *lag-id* | [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*] [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...]

no tagged lag *lag-id* [**to** *lag-id* | [**lag** *lag-id* **to** *lag-id* | **lag** *lag-id*] [**ethernet** *stackid/slot/port* **to** *stackid/slot/port* | **ethernet** *stackid/slot/port*]...]

Parameters

lag *lag-id*

Specifies the LAG virtual interface.

to *lag-id*

Specifies a range of LAG IDs.

ethernet *stackid/slot/port*

Specifies the Ethernet interface to configure as a tagged port.

to *stackid/slot/port*

Specifies a range of Ethernet interfaces.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command removes the tagging of the LAG virtual interfaces.

Examples

The following example tags the LAG virtual interfaces 1 to 3 to VLAN 4.

```
device# configure terminal
device(config)# vlan 4
device(config-vlan-4)# tagged lag 1 to 3
```

History

Release version	Command history
08.0.61	This command was introduced.

telnet

Enables a Telnet connection from the device to a remote IPv6 host using the console.

Syntax

telnet { *host-name* | *host-ipaddress* } [*remote-port-num*]

telnet { *host-name* | *host-ipv6address* } [**outgoing-interface** { **ethernet** *stack/slot/port* | **ve** *ve-num* }] [*remote-port-num*]

Parameters

host-name
: Specifies the host name of the remote host.

host-ipaddress
: Specifies the IPv4 address of the remote host.

remote-port-num
: Specifies the port number on which the device establishes theTelnet connection. Valid values are 1 to 65535. If you do not specify a port number, the device establishes the Telnet connection on port 23.

host-ipv6address
: Specifies the IPv6 address of the remote host.

outgoing-interface
: Identifies the interface that must be used to reach the remote host.

ethernet *stack/slot/port*
: Identifies the Ethernet interface that must be used to reach the remote host.

ve *ve-num*
: Identifies the VE interface that must be used to reach the remote host.

Modes

Privileged EXEC mode

Usage Guidelines

The **telnet** command establishes a Telnet connection from a device to a remote host using the console. Up to five read-access Telnet sessions are supported on the router at one time. Write-access through Telnet is limited to one session, and only one outgoing Telnet session is supported on the router at one time. To see the number of open Telnet sessions at any time, enter the **show telnet** command.

Examples

The following example establishes a Telnet connection to a remote host with the IPv6 address of 2001:DB8:3de2:c37::6.

```
device# telnet 2001:DB8:3de2:c37::6
```

telnet server enable

Configures Telnet access only to clients in a specific VLAN.

Syntax

telnet server enable vlan *vlan-num*

no telnet server enable vlan *vlan-num*

Command Default

Telnet access is not restricted.

Parameters

vlan *vlan-num*

Configures access only to clients connected to ports within the VLAN.

Modes

Global configuration mode

Usage Guidelines

You can restrict Telnet access to a Ruckus device to ports within a specific port-based VLAN. VLAN-based access control works in conjunction with other access control methods. Clients connected to ports that are not in the VLAN are denied management access.

The **no** form of the command allows Telnet access to all clients.

Examples

The following example shows how to allow Telnet access only to clients connected to ports within port-based VLAN 40.

```
device(config)# telnet server enable vlan 40
```

telnet strict-management-vrf

Allows incoming Telnet connection requests only from the management VRF and not from the out-of-band (OOB) management port.

Syntax

telnet strict-management-vrf

no telnet strict-management-vrf

Command Default

When the management VRF is configured, incoming Telnet connection requests are allowed from the ports that belong to the management VRF and from the OOB management port.

Modes

Global configuration mode

Usage Guidelines

The **telnet strict-management-vrf** command is applicable only when the management VRF is configured. If a management VRF is not configured, configuring the **telnet strict-management-vrf** command displays an error message.

The **telnet strict-management-vrf** command does not prevent a connection initiated from the OOB management interface if the management interface VRF and the management VRF are the same. The user must configure either the **management exclude all oob** command or the **management exclude telnet oob** command.

For the Telnet server, changing the management VRF configuration or configuring the **telnet strict-management-vrf** command does not affect the existing Telnet connections. The changes are applied only to new incoming connection requests.

The **telnet strict-management-vrf** command and the **management exclude** commands are mutually exclusive. If the latter command is configured, outbound Telnet connections are not blocked.

The **no** form of the command enables the incoming Telnet connection requests from ports that belong to the management VRF and from the out-of-band management port.

Examples

The following example allows incoming Telnet connection requests from the management VRF only.

```
device(config)# telnet strict-management-vrf
```

History

Release version	Command history
08.0.50	This command was introduced.

Related Commands

management exclude

temperature warning

Changes the temperature threshold at which the device sends a syslog message and an SNMP trap.

Syntax

temperature warning { *stack-id temp-threshold* }

Command Default

The default threshold varies by the hardware device. Refer to the hardware installation guide for your device.

Parameters

stack-id

Stack number. Value is from 1 to 8.

temp-threshold

Temperature warning level, in Celsius. See Usage Guidelines for more details.

Modes

Privileged EXEC mode

Usage Guidelines

When setting the *temp-threshold* option, you must not set this level higher than the maximum value allowed by your device. The temperature warning level must be at least five degrees Celsius less than the temperature shutdown level, which is automatically set by the device.

Examples

The following example sets the temperature threshold to 75°C.

```
device# temperature warning 1 75
```

terminal monitor

Enables the real-time display for a Telnet or SSH session.

Syntax

terminal monitor

Command Default

Real-time display is not enabled.

Modes

Privileged EXEC mode

Usage Guidelines

The command toggles the feature on and off. The CLI displays a message to indicate the status change for the feature. To enable or disable the feature in the management session, enter the **terminal monitor** command again.

Any terminal logged on to a RUCKUS switch can receive real-time Syslog messages when the **terminal monitor** command is issued.

Examples

The following example enables real-time display for a Telnet or SSH session.

```
device# terminal monitor
Syslog trace was turned ON
SYSLOG: <9>device, Power supply 2, power supply on left connector, failed
SYSLOG: <14>device, Interface ethernet 6, state down
SYSLOG: <14>device, Interface ethernet 2, state up
```

The following example disables real-time display for a Telnet or SSH session.

```
device# terminal monitor
Syslog trace was turned OFF
```

tftp disable

Disables TFTP client access.

Syntax

tftp disable

no tftp disable

Command Default

TFTP client access is enabled.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command enables TFTP client access.

Examples

The following example shows how to disable TFTP client access.

```
device(config)# tftp disable
```

tftp-server

Specifies the address or name of the TFTP server to be used by the DHCP client.

Syntax

tftp-server { **address** | **name** *server-name* }

Parameters

address

Specifies the IP address of the DHCP server.

name *server-name*

Configures the TFTP server specified by the server name.

Modes

DHCP server pool configuration mode

Usage Guidelines

If DHCP options 66 (TFTP server name) and option 150 (TFTP server IP address) are both configured, the DHCP client ignores option 150 and tries to resolve the TFTP server name (option 66) using DNS.

Examples

The following example specifies the TFTP server to be used by the DHCP client.

```
device(config)# ip dhcp-server-pool cabo
device(config-dhcp-cabo)# tftp-server 10.7.5.48
```

tftp-server (Image)

Configures the TFTP server location where auto image copy can download a software image.

Syntax

tftp-server *ip-address* **image-location** *path*

no tftp-server *ip-address* **image-location** *path*

Command Default

No TFTP server location is configured for auto image copy downloads.

Parameters

ip-address

Specifies the IP address of the TFTP server.

image-location *path*

Specifies the directory path to the software image on the TFTP server.

Modes

Global configuration mode

Usage Guidelines

To avoid image mismatch issues, set up a TFTP server for auto image copy before configuring a stack.

The **no** form of the command removes the TFTP server configuration.

Examples

The following example specifies a TFTP server location where a software image is located:

```
device(config)# tftp-server 10.1.2.1 image-location /server/builds/
```

History

Release version	Command history
08.0.00a	This command was introduced.

timeout (EFM-OAM)

Configures the time in seconds for which the local Data Terminal Equipment (DTE) waits to receive OAM Protocol Data Units (OAMPDUs) from the remote entity.

Syntax

timeout *value*

no timeout *value*

Command Default

The default value is 5 seconds.

Parameters

value

Specifies the time in seconds for which the local DTE must wait for OAMPDUs from the remote entity. The value range can be from 1 through 10 seconds.

Modes

EFM-OAM protocol configuration mode

Usage Guidelines

If the local DTE does not receive any OAMPDU within the specified period, the peer is considered down and the EFM-OAM discovery process will start over again.

The **no** form of the command restores the default value of 5 seconds.

Examples

The following example configures the timeout value as 10 seconds.

```
device(config)# link-oam
device(config-link-oam)# timeout 10
```

History

Release version	Command history
08.0.30	This command was introduced.

timers (BGP)

Adjusts the interval at which BGP KEEPALIVE and HOLDTIME messages are sent.

Syntax

timers { **keep-alive** *keepalive_interval* **hold-time** *holdtime_interval* }

no timers

Parameters

keep-alive *keepalive_interval*

Frequency in seconds with which a device sends keepalive messages to a peer. Range is from 0 through 65535 seconds. The default is 60.

hold-time *holdtime_interval*

Interval in seconds that a device waits to receive a keepalive message from a peer before declaring that peer dead. Range is from 0 through 65535 seconds. The default is 180.

Modes

BGP configuration mode

Usage Guidelines

The KEEPALIVE and HOLDTIME message interval is overwritten when the **fast-external-failover** command takes effect on a down link to a peer.

You must enter a value for **keep-alive** before you can enter a value for **hold-time**. Both values must be entered. If you only want to adjust the value of one parameter, enter the default value of the parameter that you do not want to adjust.

The **no** form of the command clears the timers.

Examples

The following example sets the keepalive timer for a device to 120 seconds and the hold-timer to 360 seconds.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# timers keep-alive 120 hold-time 360
```

timers (OSPFv2)

Configures Link State Advertisement (LSA) pacing and Shortest Path First (SPF) throttle timers.

Syntax

timers { **lsa-group-pacing** *interval* | **throttle spf** *start hold max* }

Command Default

See the parameters section for specific defaults.

Parameters

lsa-group-pacing *interval*

Specifies the interval at which OSPF LSAs are collected into a group and refreshed, check-summed, or aged by the OSPF process. Valid values range from 10 to 1800 seconds. The default is 240 seconds.

throttle spf

Specifies start, hold and maximum wait intervals for throttling SPF calculations for performance. The values you enter are in milliseconds.

start

Initial SPF calculation delay. Valid values range from 0 to 60000 milliseconds. The default is 0.

hold

Minimum hold time between two consecutive SPF calculations. Valid values range from 0 to 60000 milliseconds. The default is 0.

max

Maximum wait time between two consecutive SPF calculations. Valid values range from 0 to 60000 milliseconds. The default is 0.

Modes

OSPF router configuration mode

OSPF VRF router configuration mode

Usage Guidelines

The device paces LSA refreshes by delaying the refreshes for a specified time interval instead of performing a refresh each time an individual LSA refresh timer expires. The accumulated LSAs constitute a group, which the device refreshes and sends out together in one or more packets.

The LSA pacing interval is inversely proportional to the number of LSAs the device is refreshing and aging. For example, if you have a large database of 10,000 LSAs, decreasing the pacing interval enhances performance. If you have a small database of about 100 LSAs, increasing the pacing interval to 10 to 20 minutes may enhance performance.

The **no timers lsa-group-pacing** command restores the pacing interval to its default value.

The **no timers throttle spf** command sets the SPF timers back to their defaults.

Examples

The following example sets the LSA group pacing interval to 30 seconds.

```
device# configure terminal
device(config)# router ospf
device(config-ospf router)# timers lsa-group-pacing 30
```

The following example sets the SPF delay to 10000 milliseconds, the hold time to 15000 milliseconds, and the maximum wait time to 30000 milliseconds.

```
device# configure terminal
device(config)# router ospf
device(config-ospf router)# timers throttle spf 10000 15000 30000
```

timers (OSPFv3)

Configures Link State Advertisement (LSA) pacing and Shortest Path First (SPF) timers.

Syntax

timers { **lsa-group-pacing** *interval* | **spf** *start hold* }

Command Default

Enabled.

Parameters

lsa-group-pacing *interval*

Specifies the interval at which OSPFv3 LSAs are collected into a group and refreshed, check-summed, or aged by the OSPFv3 process. Valid values range from 10 to 1800 seconds. The default is 240 seconds.

spf

Specifies start and hold intervals for SPF calculations for performance. The values you enter are in milliseconds.

start

Initial SPF calculation delay. Valid values range from 0 to 65535 seconds. The default is 5 seconds.

hold

Minimum hold time between two consecutive SPF calculations. Valid values range from 0 to 65535 seconds. The default is 10 milliseconds.

Modes

OSPFv3 router configuration mode

OSPFv3 router VRF configuration mode

Usage Guidelines

The device paces LSA refreshes by delaying the refreshes for a specified time interval instead of performing a refresh each time an individual LSA refresh timer expires. The accumulated LSAs constitute a group, which the device refreshes and sends out together in one or more packets.

The LSA pacing interval is inversely proportional to the number of LSAs the device is refreshing and aging. For example, if you have a large database of 10,000 LSAs, decreasing the pacing interval enhances performance. If you have a small database of about 100 LSAs, increasing the pacing interval to 10 to 20 minutes may enhance performance.

The **no timers lsa-group-pacing** command restores the pacing interval to its default value.

The **no timers spf** command sets the SPF timers back to their defaults.

Examples

The following example sets the LSA group pacing interval to 30 seconds.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# timers lsa-group-pacing 30
```

The following example sets the SPF delay time to 10 and the hold time to 20.

```
device# configure terminal
device(config)# ipv6 router ospf
device(config-ospf6-router)# timers spf 10 20
```

timers (RIP)

Specifies how often RIP update messages are sent.

Syntax

timers { *update-timer time-out-timer hold-down-timer garbage-collection-timer* }

no timers { *update-timer time-out-timer hold-down-timer garbage-collection-timer* }

Command Default

Defaults differ by timer. Refer to timer parameter descriptions.

Parameters

update-timer

Sets the amount of time between RIP routing updates. The default is 30 seconds. Possible values are 3 through 21845 seconds.

timeout-timer

Sets the amount of time after which a route is considered unreachable. The default is 180 seconds. Possible values are 9 through 65535 seconds.

hold-down-timer

Sets the amount of time during which information about other paths is ignored. The default is 180 seconds. Possible values are 0 through 65535 seconds.

garbage-collection-timer

Sets the amount of time after which a route is removed from the RIP routing table. The default is 120 seconds. Possible values are 0 through 65535.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command returns all timers to their default settings.

RIP must be enabled before you can set the timers. All timer values, including values that are not being modified, must be present when you enter the command.

Examples

The following command sets the RIP update timer to 30 seconds, the RIP timeout timer to 180 seconds, the RIP hold-down timer to 185 seconds, and the RIP garbage collection timer to 120 seconds.

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# timer 30 180 185 120
```

timers (RIPng)

Adjusts RIPng timers.

Syntax

timers { *update-timer time-out-timer hold-down-timer garbage-collection-timer* }

no timers { *update-timer time-out-timer hold-down-timer garbage-collection-timer* }

Command Default

Defaults differ by timer. Refer to timer parameter descriptions.

Parameters

update-timer

Sets the amount of time between RIPng routing updates. The default is 30 seconds. Possible values are 3 through 65535 seconds.

timeout-timer

Sets the amount of time after which a route is considered unreachable. The default is 180 seconds. Possible values are 9 through 65535 seconds.

hold-down-timer

Sets the amount of time during which information about other paths is ignored. The default is 180 seconds. Possible values are 9 through 65535 seconds.

garbage-collection-timer

Sets the amount of time after which a route is removed from the RIPng routing table. The default is 120 seconds. Possible values are 9 through 65535.

Modes

RIPng router configuration mode

Usage Guidelines

The **no** form of the command returns the timers to their default settings.

RIPng must be enabled before you can set the timers.

You must enter values for all of the timers, even those you do not want to reset. This is true for the **no** form of the command as well.

Examples

The following example adjusts the setting for the garbage collection timer and retains default settings for all other timers.

```
device# configure terminal
device(config)# ipv6 router rip
device(config-ripng-router)# timers 30 180 180 110
```

tolerance

Configures the tolerance value for the accept keys and send keys for the keychain to extend the lifetime of the keys beyond the active lifetime duration (prior to the start of the lifetime or after the end of the lifetime).

Syntax

tolerance *value*

no tolerance *value*

Parameters

value

Specifies the tolerance duration in seconds. The valid range is from 1 through 8640000 seconds.

Modes

Keychain configuration mode

Usage Guidelines

If the tolerance value is configured, the start time of the key to become active is advanced (start time minus tolerance) and the end time is moved further ahead (end time plus tolerance) before the key expires, unless the end time is set to be infinite.

A key is considered valid when it is in the tolerance period.

The **no** form of the command removes the tolerance value added to all the keys under the keychain.

Examples

The following example configures the keychain with a tolerance value of 600 seconds (10 minutes).

```
device# configure terminal
device(config)# keychain xprotocol
device(config-keychain-xprotocol)# tolerance 600
```

History

Release	Command History
08.0.70	This command was introduced.

topology-group

Configures the topology group.

Syntax

topology-group *group-id*

no topology-group *group-id*

Command Default

A topology group is not configured.

Parameters

group-id

Specifies the topology group ID. The ID ranges from 1 through 256.

Modes

Global configuration mode

Usage Guidelines

Each topology group contains a master VLAN and can contain one or more member VLANs and VLAN groups. You must configure the master VLAN and member VLANs or member VLAN groups before you configure the topology group.

You can configure up to 30 topology groups. Each group can control up to 4096 VLANs. A VLAN cannot be controlled by more than one topology group. The topology group must contain a master VLAN and can also contain individual member VLANs, VLAN groups, or a combination of individual member VLANs and VLAN groups.

The **no** form of the command removes the topology group.

Examples

The following example configures the topology group with ID 2 and adds master VLAN and member VLANs.

```
device# configure terminal
device(config)# topology-group 2
device(config-topo-group-2)# master-vlan 2
device(config-topo-group-2)# member-vlan 3
device(config-topo-group-2)# member-vlan 4
device(config-topo-group-2)# member-vlan 5
```

traceroute

Determines the path through which a RUCKUS device can reach another device.

Syntax

traceroute [**vrf** *vrf-name*] *ipv4-address* [**source-ip** *ip-address*] [**minttl** *min-value*] [**maxttl** *max-value*] [**numeric**] [**timeout** *value*]

traceroute *host-name* [**source-ip** *ip-address*] [**minttl** *min-value*] [**maxttl** *max-value*] [**numeric**] [**timeout** *value*]

traceroute ipv6 [**vrf** *vrf-name*] *ipv6-address* [**minttl** *min-value*] [**maxttl** *max-value*] [**numeric**] [**timeout** *value*]

traceroute ipv6 *host-name* [**minttl** *min-value*] [**maxttl** *max-value*] [**numeric**] [**timeout** *value*]

Parameters

vrf *vrf-name*
Specifies the Virtual Routing and Forwarding (VRF) instance.

ipv4-address
Specifies the host IPv4 address.

source-ip *ip-address*
Configures an IP address to be used as the origin for the traceroute.

minttl *min-value*
Specifies the minimum Time to Live (TTL) value (hops). The value can range from 1 through 255. The default value is 1.

maxttl *max-value*
Specifies the maximum TTL value (hops). The value can range from 1 through 255. The default value is 30.

numeric
Displays IP addresses in number format instead by name.

timeout *value*
Configures echo request timeout, in seconds. The value can range from 1 through 120. The default value is 2.

host-name
Specifies the host name.

ipv6
Displays IPv6-related information.

ipv6-address
Specifies the host IPv6 address.

Modes

User EXEC mode

Privileged EXEC mode

Usage Guidelines

The CLI displays trace-route information for each hop as soon as the information is received. Traceroute requests display all responses to a given TTL. In addition, if there are multiple equal-cost routes to the destination, the device displays up to three responses by default.

Examples

The following example issues an IPv4 traceroute.

```
device> traceroute 10.33.4.7
```

The following example issues an IPv6 traceroute.

```
device> traceroute ipv6 2001:DB8::21:22
```

track-port

Configures network reachability tracking for a specific Virtual Router Redundancy Protocol (VRRP) or VRRP Extended (VRRP-E) port.

Syntax

track-port { **ethernet** *stackid/slot/port* | **lag** *lag-id* | **ve** *num* } [**priority** *num*]

no track-port { **ethernet** *stackid/slot/port* | **lag** *lag-id* | **ve** *num* } [**priority** *num*]

Command Default

The network reachability of VRRP and VRRP-E ports or IPsec tunnels is not tracked.

Parameters

ethernet *stackid slot port*

Configures network reachability tracking for a specific Ethernet interface. A forward slash "/" must be entered between the stackid, slot, and port numbers.

lag *lag-id*

Configures network reachability tracking for a specific LAG virtual interface. The LAG is identified by a decimal number.

ve *number*

Configures network reachability tracking for a virtual Ethernet interface. Valid values range from 1 through 255.

priority *num*

Sets the track priority. Valid numbers are from 1 through 254. The tracking priority number is used when a tracked interface up or down event is detected. For VRRP, if the tracked interface becomes disabled, the current router priority is reduced to the track-port priority. (For VRRP only, interface tracking does not have any effect on an owner router; the owner priority can not be changed under configuration from 255.) For VRRP-E, if the tracked interface becomes disabled, the current router priority is reduced by the track-port priority. For VRRP, the default is 2, and for VRRP-E, the default is 5.

Modes

VRID interface configuration mode

Usage Guidelines

This command can be used to track interfaces for VRRP or VRRP-E.

For VRRP, the tracked interface can be any valid Ethernet, or virtual Ethernet interface other than the one on which this command is issued. The maximum number of interfaces you can track per virtual router is 8.

Enter the **no track-port** command with the specified options to remove the tracked port configuration.

Examples

The following example configures network reachability tracking on interface 1/1/6 and sets the track priority to 60.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.3/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# track-port ethernet 1/2/4 priority 60
```

track-port (VSRP)

Configures the VRID on one interface to track the link state of another interface on the device.

Syntax

track-port { **ethernet** *unit/slot/port* | **lag** *lag-id* | **ve** *number* } [**priority** *number*]

no track-port { **ethernet** *unit/slot/port* | **lag** *lag-id* | **ve** *number* } [**priority** *number*]

Command Default

The VRID does not track an interface.

Parameters

ethernet *unit/slot/port*
: Configures the Ethernet interface to track.

| **lag** *lag-id*
: Configures LAG virtual interface to track.

ve *number*
: Configures the virtual Ethernet interface to track.

priority *number*
: Changes the VSRP priority of the interface. The range is from 1 through 254.

Modes

VSRP VRID configuration mode

Usage Guidelines

Configuring this command is useful for tracking the state of the exit interface for the path for which the VRID is providing redundancy.

If the interface configured for tracking goes down, the VSRP VRID priority is reduced by the amount of the track port priority you specify.

The **priority** option changes the priority of the specified interface, overriding the default track port priority. To change the default track port priority, use the **backup track-priority** command.

The **no** form of the command removes the link state tracking.

Examples

The following example configures the VRID to track an Ethernet interface .

```
device(config)# vlan 200
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# track-port ethernet 1/2/4
```

The following example configures the VRID to track a VE interface.

```
device(config)# vlan 200
device(config-vlan-200)# vsrp vrid 1
device(config-vlan-200-vrid-1)# track-port ve 4 priority 4
```

History

Release version	Command history
08.0.61	The command was modified to include the **lag** lag-id option.

traffic-policy rate-limit adaptive

Configures an ACL-based flexible-bandwidth traffic policy to define rate limits on packets so that you can allow for bursts above the limit.

Syntax

traffic-policy*traffic-policy-def***rate-limit**{**byte-based**|**packet-based**}**adaptivecir***cir-value***cbs***cbs-value***pir***pir-value***pbs***pbs-value***count***

traffic-policy*traffic-policy-def***rate-limit**{**byte-based**|**packet-based**}**adaptivecir***cir-value***cbs***cbs-value***pir***pir-value***pbs***pbs-value***exceed-actiondrop**[**count**]

traffic-policy*traffic-policy-def***rate-limit**{**byte-based**|**packet-based**}**adaptivecir***cir-value***cbs***cbs-value***pir***pir-value***pbs***pbs-value***exceed-actionpermit-at-low-pri**[**count**|**remark-cos**[**count**]]

no traffic-policy*traffic-policy-def***rate-limit**{**byte-based**|**packet-based**}**adaptivecir***cir-value***cbs***cbs-value***pir***pir-value***pbs***pbs-value***count***

no traffic-policy*traffic-policy-def***rate-limit**{**byte-based**|**packet-based**}**adaptivecir***cir-value***cbs***cbs-value***pir***pir-value***pbs***pbs-value***exceed-actiondrop**[**count**]

no traffic-policy*traffic-policy-def***rate-limit**{**byte-based**|**packet-based**}**adaptivecir***cir-value***cbs***cbs-value***pir***pir-value***pbs***pbs-value***exceed-actionpermit-at-low-pri**[**count**|**remark-cos**[**count**]]

Command Default

No traffic policy is applied.

Parameters

traffic-policy-def
: Specifies the name of the traffic policy definition, in no more than seven alphanumeric characters.

{**byte-based**|**packet-based**}
: Specifies the rate as either based on a packet count or a byte count.

count
: Enables counting the number of bytes and the conformance level per packet. The single-rate three-color marker (srTCM) mechanism described in RFC 2697 is used.

cir*cir-value*
: Specifies the committed information rate (CIR) in Kbps/Pps, that is, the guaranteed rate of inbound traffic that is allowed on a port. The range is 64 through 1,000,000 Kbps.

cbs*cbs-value*
: Specifies the committed burst size (CBS), that is, the number of bytes per second allowed on a port before some packets exceed the CIR. You must specify a value greater than 0.

pir*pir-value*
: Specifies the peak information rate (PIR) in Kbps/Pps, that is, the most inbound traffic that is allowed on a port. The *pir-value* must be equal to or greater than the *cir-value*.

pbs*pbs-value*
: Specifies the peak burst size (PBS), that is, the most bytes per second allowed in a burst before all packets exceed the PIR. You must specify a value greater than 0.

exceed-action
Specifies the action for traffic that is more than is configured in the *cir-value* variable. If you do not configure this keyword, traffic that exceeds the *cir-value* is dropped

drop
Specifies dropping traffic that exceeds the rate limit.

count
Enables counting the number of bytes and the conformance level per packet. The two-rate three-color marker (trTCM) mechanism described in RFC 2698 is used.

permit-at-low-pri
Specifies permitting packets that exceed the *cir-value* and forward them at the lowest priority.

remark-cos
Sets the 802.1p priority of dropped packets to 0, that is, it sets the COS/PCP field value to 0 for the low priority traffic for any packet exceeding the rate limit set by the traffic policy

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command deletes a traffic policy definition.

Traffic policies must be referenced by one or more ACLs before they can be effective. The policies are effective on ports to which the ACLs that reference them are bound.

NOTE
You cannot delete a traffic policy definition that a port is currently using. To delete a traffic policy, you must first unbind the associated ACL.

It is recommended that you specify a PBS value that is equal to or greater than the size of the largest possible IP packet in the stream.

Examples

The following example configures a traffic policy named TPDA4 that specifies a byte-based CIR of 10000 Kbps, a CBS of 1600 Kbps, a PIR of 20000 Kbps, and a PBS of 1000 Kbps a and dropping any traffic that exceeds those limits.

```
device# configure terminal
device(config)# traffic-policy TPDA4 rate-limit byte-based adaptive cir 10000 cbs 1600 pir 20000 pbs
4000 exceed-action drop
```

The following example configures a traffic policy named tpd3 that specifies a byte-based CIR of 300 Kbps, a CBS of 300 Kbps, a PIR of 301 Kbps, and a PBS of 302 Kbps. If these limits are exceeded, traffic is permitted at low priority.

```
device# configure terminal
device(config)# traffic-policy tpd3 rate-limit byte-based adaptive cir 300 cbs 300 pir 301 pbs 302
exceed-action permit-at-low-pri
```

History

Release version	Command history
08.0.95	This command was modified to support a committed information rate (CIR) specified as either bytes or packets.

traffic-policy rate-limit fixed

Configures an ACL-based fixed-rate traffic policy to define rate limits on packets. The policy either drops all traffic that exceeds the limit or forwards the traffic at the lowest priority level.

Syntax

traffic-policy *traffic-policy-name* **rate-limit** { **byte-based** | **packet-based** } **fixed cir** *cir-value* **count**

traffic-policy *traffic-policy-name* **rate-limit** { **byte-based** | **packet-based** } **fixed cir** *cir-value* **exceed-action drop** [**count**]

traffic-policy *traffic-policy-name* **rate-limit** { **byte-based** | **packet-based** } **fixed cir** *cir-value* **exceed-action permit-at-low-pri** [**count** | **remark-cos** [**count**]]

no traffic-policy *traffic-policy-name* **rate-limit** { **byte-based** | **packet-based** } **fixed cir** *cir-value* **count**

no traffic-policy *traffic-policy-name* **rate-limit** { **byte-based** | **packet-based** } **fixed cir** *cir-value* **exceed-action drop** [**count**]

no traffic-policy *traffic-policy-name* **rate-limit** { **byte-based** | **packet-based** } **fixed cir** *cir-value* **exceed-action permit-at-low-pri** [**count** | **remark-cos** [**count**]]

Command Default

No traffic policy is applied.

Parameters

traffic-policy-name
: Specifies the name of the traffic policy in no more than eight alphanumeric characters.

cir *cir-value*
: Specifies the committed information rate (CIR), that is, the guaranteed rate of inbound traffic that is allowed on a port. For a byte-based CIR, the range is 64 through 40,000,000 Kbps. For a packet-based CIR, the range is 30 through 100,000.

byte-based
: Specifies the CIR rate is byte-based.

packet-based
: Specifies the CIR rate is packet-based.

count
: Enables counting the number of bytes and the conformance level per packet. The single-rate three-color marker (srTCM) mechanism described in RFC 2697 is used.

exceed-action
: Specifies the action for traffic that exceeds the configured *cir-value*. If you do not configure this keyword, traffic that exceeds the *cir-value* is dropped

drop
: Specifies dropping traffic that exceeds the rate limit.

count
: Enables counting the number of bytes and the conformance level per packet. The single-rate three-color marker (srTCM) mechanism described in RFC 2697 is used.

permit-at-low-pri

Specifies permitting packets that exceed the *cir-value* and forwarding them at the lowest priority.

remark-cos

Sets the 802.1p priority of dropped packets to 0, that is, sets the COS/PCP field value to 0 for low priority traffic for any packet that exceeds the rate limit defined by the traffic policy.

Modes

Global configuration mode

Usage Guidelines

The **no** form of this command deletes a traffic policy definition.

Traffic policies must be referenced by one or more ACLs to be put in effect. The policies are applied on ports to which the ACLs that reference them are bound.

NOTE

You cannot delete a traffic policy definition that is currently in use on a port. To delete a traffic policy, you must first unbind the associated ACL.

Examples

This example configures a traffic policy named TPD1 with a CIR of 100 Kbps that drops any traffic beyond that limit.

```
device# configure terminal
device(config)# traffic-policy TPD1 rate-limit byte-based fixed  cir 100 exceed-action drop
```

History

Release version	Command history
08.0.95	This command was modified to support a committed information rate (CIR) in either bytes or packets.

transform

Configures a transform set for an IPsec proposal.

Syntax

transform esp

Command Default

Encapsulating Security Payload (ESP)

Parameters

esp

Specifies the Encapsulating Security Payload transform set.

Modes

IPsec proposal configuration mode

Usage Guidelines

Only ESP is currently supported. Therefore, you do not need to configure the transform set for an IPsec proposal because the only option is configured by default.

Examples

The following example shows how to configure ESP as the transform set for an IPsec proposal named ipsec_prop.

```
device(config)# ipsec proposal ipsec_prop
device(config-ipsec-proposal-ipsec_prop)# transform esp
```

History

Release version	Command history
08.0.50	This command was introduced.

trunk-threshold

Configures the threshold value for the number of active member ports in a LAG, below which all the ports in a LAG group are disabled.

Syntax

trunk-threshold *number*

no trunk-threshold *number*

Command Default

The t runk threshold is set to 1.

Parameters

number

Specifies the number of ports as the threshold number. You can specify a threshold from 1 (the default) up to the number of ports in the LAG group.

Modes

LAG configuration mode

Usage Guidelines

When a LAG is shut down because the number of ports drops below the configured threshold, the LAG is kept intact and it is re-enabled if enough ports become active to reach the threshold.

NOTE
The **trunk-threshold** command cannot be used in conjunction with protected link groups.

NOTE
The **trunk-threshold** command is only applicable for the configuration of static LAGs.

The **trunk-threshold** command should be configured only at one end of the LAG. If it is set on both ends, link failures will result in race conditions and the LAG not function properly. Use a short LACP timeout when setting the **trunk-threshold** value equal to the number of links in the LAG or connecting to third-party devices.

The **no** form of the command removes the **trunk-threshold** configuration.

Examples

The following example shows how to establish a LAG group consisting of four ports, and then establish a threshold for this LAG group of three ports. If the number of active ports drops below three, then all the ports in the LAG group are disabled.

```
device(config)# lag blue static
device(config-lag-blue)# ports ethernet 1/3/1 to 1/3/4
device(config-lag-blue)# trunk-threshold 3
```

trust dscp

Configures the device to honor DSCP-based QoS for routed and switched traffic.

Syntax

trust dscp

no trust dscp

Command Default

The interface honors the Layer 2 CoS value.

Modes

Interface configuration mode

Usage Guidelines

The **no** form of the command disables the device from honoring DSCP-based QoS.

NOTE
This command is not supported with 802.1p priority override.

Examples

The following example honors DSCP-based QoS.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# trust dscp
```

trust-port

Configures ports of a Web Authentication VLAN as trusted ports.

Syntax

trust-port ethernet *stack/slot/port* [**to** *stack/slot/port*]

no trust-port ethernet *stack/slot/port* [**to** *stack/slot/port*]

Command Default

Ports of a Web Authentication VLAN are not trusted.

Parameters

ethernet *stack/slot/port*

Configures the specified Ethernet interface as a trusted port.

to *stack/slot/port*

Configures a range of Ethernet interfaces as trusted.

Modes

Web Authentication configuration mode

Usage Guidelines

All hosts connected to the trusted ports need not authenticate and are automatically allowed access to the network.

The **no** form of the command removes the trusted port configuration.

Examples

The following example shows how to configure an Ethernet interface as a trusted port.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# trust-port ethernet 1/1/1
```

The following example shows how to configure a range of ports as trusted.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# trust-port ethernet 1/1/1 to 1/1/10
```

tunnel destination

Configures the destination address for a specific tunnel interface.

Syntax

tunnel destination{*ip-address*|*ipv6-address*}

no tunnel destination{*ip-address*|*ipv6-address*}

Command Default

No tunnel interface destination is configured.

Parameters

ip-address

Specifies the IPv4 address of an interface.

ipv6-address

Specifies the IPv6 address of the destination.

Modes

Interface tunnel configuration mode

Usage Guidelines

You must ensure that a route to the tunnel destination exists on the tunnel source device and create a static route if necessary.

The **no** form of the command removes the configured destination for the tunnel interface.

Examples

The following example configures the IP address 10.1.2.3 as the destination address for a specific tunnel interface.

```
device# configure terminal
device(config)# interface tunnel 3
device(config-tnif-3)# tunnel destination 10.1.2.3
```

History

Release version	Command history
08.0.41	This command was introduced.
08.0.70	This command added support for IPv6 addressing for IPsec tunnels.

Related Commands

tunnel source

tunnel mode gre ip

Enables generic routing encapsulation (GRE) over on a tunnel interface and specifies that the tunneling protocol is IPv4.

Syntax

tunnel mode gre ip

no tunnel mode gre ip

Command Default

GRE is disabled.

Modes

Interface tunnel configuration mode

Usage Guidelines

The **no** form of the command disables the GRE IP tunnel encapsulation method for the tunnel interface.

Examples

The following example enables GRE IP encapsulation on a tunnel interface.

```
device# configure terminal
device(config)# interface tunnel 3
device(config-tnif-3)# tunnel mode gre ip
```

Related Commands

interface tunnel

tunnel mode ipv6ip

Configures the tunnel mode as a manual IPv6 tunnel.

Syntax

tunnel mode ipv6ip

no tunnel mode ipv6ip

Command Default

A tunnel is not configured.

Modes

Interface tunnel configuration mode

Usage Guidelines

You can use a manually configured tunnel to connect two isolated IPv6 domains. You should deploy this point-to-point tunneling mechanism if you need a permanent and stable connection.

The **no** form of the command removes the configured tunnel mode.

Examples

The following example configures the tunnel mode as a manual IPv6 tunnel.

```
device(config)# interface tunnel 1
device(config-tnif-1)# tunnel source ethernet 1/1/1
device(config-tnif-1)# tunnel destination 10.162.100.1
device(config-tnif-1)# tunnel mode ipv6ip
device(config-tnif-1)# ipv6 enable
```

tunnel path-mtu-discovery

Enables Path MTU Discovery (PMTUD).

Syntax

tunnel path-mtu-discovery{**age-timer**{*time*|**infinite**}|**disable**}

no tunnel path-mtu-discovery{**age-timer**{*time*|**infinite**}|**disable**}

Command Default

PMTUD is enabled by default.

Parameters

age-timer

Configures the time after which the path MTU resets to its original value.

time

Sets the time after which the path MTU resets to its original value. Valid values are 10 to 30 minutes. The default value is 10 minutes.

infinte

Sets the aging time as infinite, that is, disables aging for PMTUD.

disable

Disables aging for PMTUD.

Modes

Tunnel interface configuration mode

Usage Guidelines

The **no** form of the command disables PMTUD and resets the aging to the default value of 10 minutes.

Examples

The following example changes the reset time (default age timer) to a value of 25.

```
device(config)# tunnel interface 1
device(config-tnif-1)# tunnel path-mtu-discovery age-timer 25
```

The following example disables aging for PMTUD.

```
device(config)# tunnel interface 1
device(config-tnif-1)# tunnel path-mtu-discovery disable
```

tunnel source

Configures the source address or a source interface for a specific tunnel interface.

Syntax

tunnel destination{*ip address*|*ipv6 address*|**ethernet***unit / slot / port* |**loopback***number*|**ve***vlan_id*}

no tunnel destination{*ip address*|*ipv6 address*|**ethernet***unit / slot / port* |**loopback***number*|**ve***vlan_id*}

Command Default

No source address or interface is configured.

Parameters

ip address
: Specifies the IPv4 address of an interface.

ipv6 address
: Specifies the IPv6 address of the source.

ethernet*unit / slot / port*
: Specifies an Ethernet interface.

loopback*number*
: Specifies an loopback port.

ve*vlan_id*
: Specifies a VE interface.

Modes

Interface tunnel configuration mode

Usage Guidelines

Use the **no tunnel source** command to remove the configured source for the tunnel interface.

The tunnel source address should be one of the router IP addresses configured on a physical, loopback, or VE interface, through which the other end of the tunnel is reachable. The source interface must have at least one IP address configured on it.

Examples

The following example configures the IP address 10.1.2.4 as the source address for a specific tunnel interface.

```
device# configure terminal
device(config)# interface tunnel 3
device(config-tnif-3)# tunnel source 10.1.2.4
```

The following example sets an Ethernet interface as a source tunnel.

```
device# configure terminal
device(config)# interface tunnel 1
device(config-tnif-1)# tunnel source ethernet 1/3/1
```

History

Release version	Command history
08.0.41	This command was introduced.
08.0.70	This command added support for IPv6 addressing for IPsec tunnels.

Related Commands

tunnel destination

unit-name (Stacking)

Applies a name to a stack member.

Syntax

unit-name *name_string*

no unit-name *name_string*

Command Default

By default, units are identified by an ID number.

Parameters

name_string

Specifies the name of a stack unit. A unit name can be up to 63 characters long. A unit name must start with an alpha character and must not contain spaces.

Modes

Stack unit configuration sub-mode

Usage Guidelines

The **no** form of the command removes the unit name.

Examples

The following example applies names to the members of a three-unit stack, based on the building they support.

```
device# configure terminal
device(config)# stack unit 1
device(config-unit-1)# unit-name building1
device(config-unit-1)# stack unit 2
device(config-unit-2)# unit-name building2
device(config-unit-2)# stack unit 3
device(config-unit-3)# unit-name building3
device(config-unit-3)# end
device# write memory

Automatic copy to member units:  2  3
Flash Memory Write (8192 bytes per dot)
.
Copy Done.
```

History

Release version	Command history
08.0.90	This command was introduced.

unknown-unicast limit

Configures the maximum number of unknown unicast packets allowed per second and generates infralogs for pps packets.

Syntax

unknown-unicast limit*num*

unknown-unicast limit*num***kbpslog**

rate-limit-log*num*

rate-limit-pps-log*num*

unknown-unicast limit*num*[**kbps** | **pps**]**threshold***num***actionport-shutdown***num*

no unknown-unicast limit*num*

no unknown-unicast limit*num***kbpslog**

no-rate-limit-log*num*

no rate-limit-pps-log*num*

no unknown-unicast limit*num*[**kbps** | **pps**]**threshold***num***actionport-shutdown***num*

Command Default

Unknown unicast rate limiting is disabled.

Parameters

num

Specifies the maximum number of unknown unicast packets per second. For kbps, the value can be from 1 through 1000000. For pps, the value can be from 1 through 8388607.

kbps

Enables byte-based limiting. The value can be 1 to Max Port Speed.
When kbps is not specified, the rate limiting happens in packets per second (pps).

log

Enables Syslog logging of unknown unicast packets when the unknown unicast limit exceeds *num***kpbs**.

rate-limit-log

Configures the log timer for the kbps ports. The value can be from 1 through 10 minutes. Default value is 5 minutes.

rate-limit-pps-log

Configures the log timer for the pps ports. The value can be from 1 through 600 seconds. Default value is 300 seconds.

threshold*num*

Specifies the packet drop count threshold value. For kbps, valid values range from 1 through 1048576. For pps, valid values range from 1 through 8388607.

action

Specifies further action must be taken.

port-shutdown

Specifies that port shutdown is the action taken.

For pps, the port shutdown value is from 1 through 65535. Default value is 5 minutes.

Modes

Interface configuration mode

Usage Guidelines

Use the **no** form of the command to disable unknown unicast rate limiting.

Examples

The following example enables a unknown unicast limit of 131072 Kbps.

```
device(config)# interface ethernet 9/1/1
device(config-if-e1000-9/1/1)# unknown-unicast limit 131072 kbps
```

The following example enables unknown unicast logging when the configured limit exceeds 100 Kbps.

```
device(config)# interface ethernet 1/2/1
device(config-if-e1000-1/2/1)# unknown-unicast limit 100 kbps log
```

The following example enables the kbps log timer interval to 3 minutes when kbps rate limit is configured.

```
device(config)# rate-limit-log 3
```

The following example enables the pps log timer interval to 200 seconds when pps rate limit is configured.

```
device(config)# rate-limit-pps-log 200
```

The following example sets the packet drop count threshold value for pps to 1500 and specifies that the port shutdown action is taken.

```
device(config)# interface ethernet 1/2/4
device(config-if-e10000-1/2/4)# unknown-unicast limit 1500 pps threshold 2000 action port-shutdown 7
```

History

Release version	Command history
08.0.10	The command was introduced.
08.0.40a	The command was modified to include the **log** keyword.
09.0.10	The command was modified to include the **pps** keyword and pps log timer was introduced.

unmount disk0

Unmounts the external USB.

Syntax

unmount disk0

Modes

Privileged EXEC mode

Examples

The following example unmounts the external USB.

```
device# unmount disk0
```

History

Release version	Command history
08.0.30	This command was introduced.

untagged

Adds untagged ports to the VLAN.

Syntax

untagged { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

no untagged { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] }

Parameters

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Configures and adds a port, set of ports, or range of ports as untagged.

lag *lag-id* [**to** *lag-id*]

Configures a LAG virtual interface, set of LAG virtual interfaces, or range of LAG virtual interfaces to be added as untagged ports. (LAG ID is a decimal value.)

to

When followed by a port number, onfigures a range of ports. When followed by a LAG ID, configures a range of LAGs.

Modes

VLAN configuration mode

Usage Guidelines

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of the command removes the untagged ports on the VLAN.

Examples

The following example shows how to add a range of untagged Ethernet ports to a port-based VLAN.

```
device(config)# vlan 222 by port
device(config-vlan-222)# untagged ethernet 1/1/1 to 1/1/8
```

History

Release version	Command history
08.0.61	This command was modified to include LAG ID options.

update-lag-name

Changes the name of an existing LAG without causing any impact on the functionality of the LAG.

Syntax

update-lag-name *new-name*

Parameters

new-name

Specifies the new name for the LAG.

Modes

LAG configuration mode

Usage Guidelines

The new name must be unique and unused.

Examples

The following example renames LAG blue to blue1.

```
device(config)# lag blue static
device(config-lag-blue)# update-lag-name blue1
INFORMATION: Lag blue with ID 1 is updated to new name blue1
device(config)#
```

History

Release version	Command history
08.0.30	This command was introduced.

update-time (BGP)

Configures the interval at which BGP next-hop tables are modified. BGP next-hop tables should always have IGP (non-BGP) routes.

Syntax

update-time *sec*

no update-time *sec*

Parameters

sec

Update time in seconds. Valid values range from 0 through 30. Default is 5 seconds.

Modes

BGP configuration mode

BGP address-family IPv6 unicast configuration mode

Usage Guidelines

When this command is entered in BGP global configuration mode, it applies only to the IPv4 address family. Use this command in BGP address-family IPv6 unicast configuration mode for BGP4+ configurations.

The update time determines how often the device computes the routes (next-hops). Lowering the value set by the **update-time** command increases the convergence rate.

By default, the device updates the BGP next-hop tables and affected BGP routes five seconds following IGP route changes. Setting the update time value to 0 permits fast BGP convergence for situations such as a link failure or IGP route changes, starting the BGP route calculation in sub-second time.

NOTE
Use the **advertisement-interval** command to determine how often to advertise IGP routes to the BGP neighbor.

Examples

The following example permits fast convergence for the IPv4 unicast address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# update-time 0
```

The following example sets the update time interval to 30 the IPv6 unicast address family.

```
device# configure terminal
device(config)# router bgp
device(config-bgp-router)# address-family ipv6 unicast
device(config-bgp-ipv6u)# update-time 30
```

update-time (RIP)

Specifies how often the device sends RIP route advertisements to its RIP neighbors.

Syntax

update-time *value*

no update-time *value*

Command Default

By default, the update interval is 30 seconds.

Parameters

value

Specifies the update interval in seconds. Allowable values are from 3 through 21845.

Modes

RIP router configuration mode

Usage Guidelines

The **no** form of the command returns the update interval to its default value.

The update time can also be modified through the RIP **timers** command.

Examples

The following example configures the RIP router to send route advertisements to its neighbors every two minutes (120 seconds).

```
device# configure terminal
device(config)# router rip
device(config-rip-router)# update-time 120
```

uplink-port (Web Auth)

Specifies an Ethernet port or LAG to be used for connecting to the user's uplink switch.

Syntax

uplink-port { **ethernet** *port* |**lag** *lag-id* }

no uplink-port { **ethernet** *port* |**lag** *lag-id* }

Parameters

ethernet *port*

Specifies the port to be used for uplink to the web in the form *unit/slot/port*.

lag *lag-id*

Specifies the LAG to be used for uplink to the web as a numeric LAG ID. The valid range is 1 through 256.

Modes

Web Authentication configuration mode

Usage Guidelines

The **no** form of the command removes the uplink port configuration.

Configure the **uplink-port** command as part of Network Segmentation to allow the user/client to move to a RADIUS-returned VLAN, along with the access port, after successful Web Authentication. After the user/client is moved, the ICX system saves the updated port configuration to the startup-config file.

Be sure the username and password are associated with the new VLAN in the authentication server.

The Web authentication client for which the uplink-port is configured must not be a member of the Flexible authentication VLAN.

Examples

The following example configures an Ethernet port as the uplink port to be used by a user assigned to VLAN 6 for access to Web services.

```
device# configure terminal
device(config)# vlan 6
device(config-vlan-6)# webauth
device(config-vlan-6-webauth)# uplink-port ethernet 1/1/1
```

The following example configures a LAG connection for a user assigned to VLAN 10 for access to Web services.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# uplink-port lag 2
```

History

Release version	Command history
09.0.10	This command was introduced.

use-radius-server

Maps a RADIUS server to a port.

Syntax

use-radius-server *ip-address*

no use-radius-server *ip-address*

Command Default

The RADIUS server is not mapped to any port.

Parameters

ip-address

The IP address of the RADIUS server.

Modes

Interface configuration mode

Usage Guidelines

Once the RADIUS server is mapped to a port, the port sends the RADIUS request to the configured RADIUS server.

The **no** form of the command removes the mapping of the RADIUS server to the port.

Examples

The following example shows how to map a RADIUS server to the interface 1/1/3 (port 3). Port 3 sends a RADIUS request to 10.10.10.103 first, because it is the first server mapped to the port. If the request fails, the server will go to 10.10.10.110.

```
device(config)# interface ethernet 1/1/3
device(config-if-e1000-1/1/3)# use-radius-server 10.10.10.103
device(config-if-e1000-1/1/3)# use-radius-server 10.10.10.110
```

use-v2-checksum

Enables the v2 checksum computation method for an IPv4 Virtual Router Redundancy Protocol version 3 (VRRPv3) session.

Syntax

use-v2-checksum

no use-v2-checksum

Command Default

VRRPv3 uses the v3 checksum computation method.

Modes

VRRP configuration mode

Usage Guidelines

The **no** form of this command enables the default v3 checksum computation method in VRRPv3 sessions.

Some non-Ruckus devices only use the v2 checksum computation method in VRRPv3. This command enables the v2 checksum computation method in VRRPv3 and provides interoperability with these non-Ruckus devices.

Examples

The following example shows the v2 checksum computation method enabled in IPv4 and IPv6 VRRPv3 instances.

```
device(config)# interface ve 3
device(config-vif-3)# ipv4 vrrp vrid 2
device(config-vif-3-vrid-2)# version v3
device(config-vif-3-vrid-2)# use-v2-checksum

device(config)# interface ve 3
device(config-vif-3)# ipv6 vrrp vrid 2
device(config-vif-3-vrid-2)# use-v2-checksum
```

History

Release version	Command history
08.0.01	This command was introduced for IPv6 VRRPv3 sessions running on FastIron device images.
08.0.10b	This command was modified for IPv4 VRRPv3 sessions running on FastIron device images.

use-vrrp-path (RIP)

Suppresses RIP advertisements for interfaces on which Virtual Router Redundancy Protocol (VRRP) or VRRP Extended (VRRP-E) backup routers are configured.

Syntax

use-vrrp-path

no use-vrrp-path

Command Default

RIP advertisements are enabled.

Modes

RIP configuration mode

Usage Guidelines

The command applies only to devices configured for Virtual Router Redundancy Protocol (VRRP) or for VRRP Extended (VRRPE). The same command syntax is used for both protocols. The command applies only if you have specified an IP address to back up and is valid only on Layer 3 Switches.

Normally for Layer 3, a VSRP backup includes route information in RIP advertisements for an interface with a VRRP or VRRP-E backup. As a result, other Layer 3 switches receive multiple paths for the backed-up interface and may sometimes unsuccessfully use the path to the backup router rather than the path to the master.

Use the command to suppress RIP advertisements from the backup router on the interface. This ensures that the interface advertises paths to the master router only.

The **no** form of this command resets the default behavior, and the interface sends RIP advertisements from the backup router.

Examples

The following example shows how to suppress RIP advertisements from backup VRRP or VRRP-E routers.

```
device(config)# router rip
device(config-rip-router)# use-vrrp-path
```

username

Creates or updates a user account.

Syntax

username *username-string* { **access-time** *begin-time* **to** *end-time* | **create-password** *password-string* | **enable** | **expires** *days* | **password** *password-string* | **privilege** *privilege-level* { **create-password** *password-string* | **password** *password-string* } }

no username *username-string* { **access-time** *begin-time* **to** *end-time* | **create-password** *password-string* | **enable** | **expires** *days* | **password** *password-string* | **privilege** *privilege-level* { **create-password** *password-string* | **password** *password-string* } }

Command Default

The user account is not created.

Parameters

username-string

The configured username. You can enter up to 48 characters.

access-time *begin-time* **to** *end-time*

Configures the access permission for a specified period of time of the day, that is, between the specified beginning access time and ending access time.

create-password *password-string*

Creates an encrypted password for the user. You can enter up to 48 characters.

enable

Enables the user for login access after the login access is disabled.

expires *days*

Configures the password expiration time in days. Valid values range from 1 through 365. The default is 90.

privilege *privilege-level*

Sets the user's privilege level. The default privilege level is 0. You can specify one of the following levels:

0

Super User level (full read-write access).

4

Port Configuration level.

5

Read Only level.

6

Cloud user.

7

Does not have permission to read syslogs.

password *password-string*

Configures the password for the user. You can enter up to 48 characters.

Modes

Global configuration mode

Usage Guidelines

You must be logged in with Super User access (privilege level 0) to add or delete user accounts or configure or modify other access parameters.

When a user is given a privileged level of 7, they cannot obtain view syslog information when using the **show logging** command. They will see the following: "ERROR: This user does not have permissions to read syslog."

By default, user account details can be deleted or modified without any authentication. Unauthorized deletion or modification of the user account can be prevented using the **service local-user-protection** command. If the user account security is enabled using the **service local-user-protection** command, deletion of user accounts or changing the password or privilege level of the user is permitted only upon successful validation of the existing user password.

If the **enable strict password enforcement** command is enabled on the device, for the password string, you must enter a minimum of eight characters containing the following combinations:

- At least two uppercase characters
- At least two lowercase characters
- At least two numeric characters
- At least two special characters

You can use the **show user** command to display the user account details.

The **no** form of the command removes the user or the other user parameters.

Examples

The following example configures the privilege level of Super User access (0) for a user.

```
device# configure terminal
device(config)# username user1 privilege 0 password *******
```

The following example configures an encrypted password for a user.

```
device# configure terminal
device(config)# username user1 create-password xpassx
```

The following example configures the access time for a user.

```
device# configure terminal
device(config)# username user1 access-time 00:00:00 to 12:00:00
```

The following example enables a user account if it is disabled.

```
device# configure terminal
device(config)# username user1 enable
```

The following example sets the user password to expire in 30 days.

```
device# configure terminal
device(config)# username user expires 30
```

The following example prompts the user to confirm existing password before successful password modification.

```
device(config)# username user1 password xpassx
device(config)# service local-user-protection
device(config)# username user1 password ypasswordy
User already exists. Do you want to modify: (enter 'y' or 'n'): y
To modify or remove user, enter current password: ******
```

The following example sets the user privilege to 7, so that the specified user cannot access or read syslogs using the **show logging** command.

```
device# configure terminal
device(config)# username user privilege 7 password pass
```

History

Release version	Command history
08.0.40	This command was modified to prompt the user to enter a valid password before deleting a user account or modifying the password or privilege level of the user.
09.0.00	This command was modified to remove the **nopassword** option.
09.0.00a	This command was modified so that a user privilege of 7 can be applied. When this is configured, the specified user cannot access the output of the **show logging** command.

username (Local Database)

Creates a user record in the local user database.

Syntax

username *username* **password** *password-string*

no username *username* [**password** *password-string*]

Command Default

User records are not created.

Parameters

username

Specifies the username for the user as an ASCII string. You can specify up to 31 characters.

password *password-string*

Specifies the password for the user. You can specify up to 29 characters.

Modes

Local user database configuration mode

Usage Guidelines

You can add up to 30 usernames and passwords to a local user database.

The **no** form of the command removes the user record from the local user database.

Examples

The following example creates a new user account and adds it to a local user database.

```
device(config)# local-userdb userdb1
device(config-localuserdb-userdb1)# username XYZ password A5!fk3p
```

valid-lifetime (DHCPv6)

Specifies how long the IPv6 prefix remains valid for onlink determination.

Syntax

valid-lifetime *interval*

Command Default

The valid lifetime interval is 0 seconds by default.

Parameters

interval

Specifies the time interval in seconds. Valid values range from 0 through 4294967295. The default is 0 seconds.

Modes

DHCPv6 server configuration mode

DHCPv6 subnet configuration mode

Usage Guidelines

To use this command, you must upgrade to FI 08.0.90 using the Unified FastIron Image (UFI). Refer to the **Software Upgrade and Downgrade** chapter in the *RUCKUS FastIron Software Upgrade Guide* for more information.

The valid lifetime option should only be specified after the preferred life-time is configured. The valid lifetime interval must be greater than or equal to the preferred lifetime interval. Refer to the **preferred-lifetime** command for more information.

When configuring the DHCPv6 server using this command along with the **preferred-lifetime (DHCPv6)**, **renewal-time (DHCPv6)**, and **rebind-time (DHCPv6)** commands, enter the commands in the following order:

1. **preferred-lifetime (DHCPv6)**
2. **valid-lifetime (DHCPv6)**
3. **rebind-time (DHCPv6)**
4. **renewal-time (DHCPv6)**

NOTE
Failure to enter the commands in the order outlined previously when configuring the DHCPv6 server results in a CLI error.

If a valid lifetime is not configured in DHCPv6 subnet configuration mode, the globally configured valid lifetime is inherited.

The **no** form of the command restores the default. If the **no** form of the command is used with an unconfigured value, an error message appears.

Examples

The following example sets the valid lifetime to 100 seconds.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# valid-lifetime 100
```

The following example sets the valid lifetime to 200 seconds in DHCPv6 subnet configuration mode.

```
device# configure terminal
device(config)# ipv6 dhcp6-server enable
device(config-dhcp6)# subnet6 3ffe:501:ffff:100::/64
device(config-dhcpv6-subnet)# valid-lifetime 200
```

History

Release version	Command history
08.0.90	This command was introduced.

Related Commands

preferred-lifetime (DHCPv6)

vendor-class

Specifies the vendor type (option 60) and configuration value for a DHCP client.

Syntax

vendor-class { **ascii** } *ascii string*

Parameters

ascii

Specifies the ascii keyword.

ascii string

Specifies the ASCII string value of the DHCP client.

Modes

DHCP server pool configuration mode

Examples

The following example specifies option 60 using the ASCII option for a Ruckus AP.

```
device# configure terminal
device(config)# ip dhcp-server-pool ruckus
device(ip dhcp-server pool ruckus)#    vendor-class ascii "Ruckus CPE"
device(ip dhcp-server pool ruckus)# deploy
```

History

Release version	Command history
08.0.30mb	An additional example was added in the Examples section for option 60.
08.0.61	Support for this command was added.

verify device-key

Verifies the cryptographic key and certificate stored on the ICX device.

Syntax

verify device-key

Modes

Privileged EXEC mode

Usage Guidelines

The command can be used for TPM and non-TPM devices.

Examples

The following example verifies the cryptographic key and certificate stored on the ICX device.

```
device# verify device-key
```

History

Release version	Command history
08.0.92	This command was introduced.

version

Sets the version number for a Virtual Router Redundancy Protocol (VRRP) session.

Syntax

version { **v2** | **v3** }

no version { **v2** | **v3** }

Command Default

VRRP version 2 is the default.

Parameters

v2

Configures VRRP version 2 for this session.

v3

Configures VRRP version 3 for this session.

Modes

Virtual routing ID interface configuration mode

Usage Guidelines

The **no** form of this command resets the VRRP session to the default of version 2.

VRRP version 2 supports IPv4 addresses, and VRRP version 3 supports both IPv4 and IPv6 addresses.

NOTE
Mixed mode (VRRPv2 and VRRPv3) is not supported in the same VRRP virtual routing ID (VRID) session.

Examples

The following example sets VRRP routing instance VRID 1 to version 3.

```
device# configure terminal
device(config)# router vrrp
device(config)# interface ethernet 1/1/6
device(config-if-e1000-1/1/6)# ip address 10.53.5.1/24
device(config-if-e1000-1/1/6)# ip vrrp vrid 1
device(config-if-e1000-1/1/6-vrid-1)# version v3
```

violation

Configures the action that must be taken according to the configurable violation modes when a security violation occurs.

Syntax

violation { **protect** | **restrict** *age* | **shutdown** *time* }

Command Default

The default action upon PMS violation is protect.

Parameters

protect

Configures the device to drop all packets which are not from secure MAC addresses. In the protect mode, the port never gets shut down.

restrict

Configures the device to drop packets from violated address and allow packets from secure addresses.

age

Configures the time, in minutes, for which the device drops packets after which the violated MAC address is aged out. The valid values are from 0 through 1440 minutes. The default is 5 minutes. Specifying 0 drops packets from the violating address permanently.

shutdown *time*

Configures the device to disable the port upon detection of first violated MAC address. The valid values are from 0 through 1440 minutes. The default value is 0 which shuts down the port permanently when a security violation occurs. The shutdown time which serves as a recovery interval, brings up the port within a configured time without any manual intervention.

Modes

Port security configuration mode

Port security interface configuration mode

Usage Guidelines

A security violation occurs when a user tries to connect to a port where a MAC address is already locked, or the maximum limit for the number of secure MAC addresses allowed on the interface is exceeded. When a security violation occurs, an SNMP trap and syslog message are generated.

When the **restrict** option is used, maximum number of MAC addresses that can be restricted is 128. If the number of violated MAC addresses exceeds 128, the port will be shut down. In this mode, manual intervention is required to bring up the port that is forced to shut down after the security violation. Aging for restricted MAC addresses is done in software. There can be a worst case inaccuracy of one minute from the specified time. The restricted MAC addresses are denied in hardware.

The required action must be specified to switch between PMS violation modes.

Examples

The following example configures the violation mode as protect that, upon security violation, drops all packets which are not from secure MAC addresses.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port security
device(config-port-security-e1000-1/1/1)# violation protect
```

The following example configures the device to drop packets from a violating address and allow packets from secure addresses.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port security
device(config-port-security-e1000-1/1/1)# violation restrict
```

The following example configures the number of minutes that the device drops packets from a violating address.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port security
device(config-port-security-e1000-1/1/1)# violation restrict 10
```

The following example shuts downs the port for 5 minutes when a security violation occurs.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# port security
device(config-port-security-e1000-1/1/1)# violation shutdown 5
```

History

Release version	Command history
08.0.70	This command was modified to add the **protect** option.

virtual-ip

Configures the IP address of the external captive portal server as the virtual IP address.

Syntax

virtual-ip { *ip-address* | *ASCII string* }

no virtual-ip { *ip-address* | *ASCII string* }

Command Default

A virtual IP address is not configured.

Parameters

ip-address

Specifies the IP address of the external captive portal server where the web pages are hosted.

ASCII string

Specifies the server name of the external captive portal server where the web pages are hosted.

Modes

Captive portal configuration mode

Usage Guidelines

The **no** form of the command removes the virtual IP address configuration.

Examples

The following example configures the IP address of the external captive portal server as the virtual IP address.

```
device(config)# captive-portal cp_ruckus
device(config-cp-cp_ruckus)# virtual-ip 10.21.240.42
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 08.0.30j.

virtual-port

Configures the HTTP port number to facilitate HTTP services for the clients in external Web Authentication.

Syntax

virtual-port *http-port-number*

no virtual-port *http-port-number*

Command Default

A virtual port number is not configured.

Parameters

http-port-number

Specifies the port number. By default, HTTPS is used and the default port number for HTTPS is 443.

Modes

Captive portal configuration mode

Usage Guidelines

The protocol configured in the Captive Portal profile must be the same as the protocol configured as part of web management access using the **web-management** command.

You can also specify HTTP mode and the default port number for HTTP is 80.

The **no** form of the command removes the virtual port number configuration.

Examples

The following example configures the virtual port number used by HTTP.

```
device(config)# captive-portal cp_ruckus
device(config-cp-cp_ruckus)# virtual-port 80
```

History

Release version	Command history
08.0.40	This command was introduced.
08.0.30j	This command was added to FastIron 08.0.30j.

vlan

Creates a VLAN or range of VLANs.

Syntax

vlan *vlan-id* [**to** *vlan-id* | [*vlan-id* **to** *vlan-id* | *vlan-id*] ...] [**name** *string*] [**by port**]

no vlan *vlan-id* [**to** *vlan-id* | [*vlan-id* **to** *vlan-id* | *vlan-id*] ...] [**name** *string*] [**by port**]

Command Default

The default VLAN is 1. Maximum allowed discrete or set of VLAN(s) is 1024.

Parameters

vlan-id

Specifies the VLAN ID.

to *vlan-id*

Creates a range of VLANs.

name *string*

Specifies the name of the VLAN. The name can be up to 32 characters in length.

by port

Configures the VLAN as a port-based VLAN.

Modes

Global configuration mode

Usage Guidelines

You can configure up to 4061 port-based VLANs on a device. Each port-based VLAN can contain either tagged or untagged ports. A port cannot be a member of more than one port-based VLAN unless the port is tagged.

NOTE

VLAN IDs 4087, 4090, and 4093 are reserved for RUCKUS internal use only. VLAN 4094 is reserved for use by a Single STP. Also, VLAN IDs 4091 and 4092 can be reserved for RUCKUS internal use only. If you want to use VLANs 4091 and 4092 as configurable VLANs, you can assign them to different VLAN IDs.

The **no** form of the command removes the VLAN.

Examples

The following example creates a port-based VLAN.

```
device# configure terminal
device(config)# vlan 222 by port
```

The following example shows the port-based VLAN configuration.

```
device# configure terminal
device(config)# vlan 10 name IP_VLAN by port
device(config-vlan-10)# untagged ethernet 1/1/1 to 1/1/6
added untagged port ethe 1/1/1 to 1/1/6 to port-vlan 10.
```

The following example creates continuous and discontinuous VLANs.

```
device# configure terminal
device(config)# vlan 2 to 7 20 25
device(config-mvlan-2*25)#
```

The following example creates continuous VLANs.

```
device# configure terminal
device(config)# vlan 2 to 7
device(config-mvlan-2-7)#
```

The following example creates discontinuous VLANs.

```
device# configure terminal
device(config)# vlan 2 4 7
device(config-mvlan-2*7)#
```

The following example binds an IPv4 ACL to members of a VLAN.

```
device(config)# vlan 6
device(config-vlan6)# ip access-group acl1 in ethernet 1/1/3 ethernet 3/1/2 lag 1
```

The following example binds several ACLs, including IPv6, IPv4, and MAC ACLs, to VLAN 555.

```
device# configure terminal
device(config)# vlan 555 by port
device(config-vlan-555)# tagged ethe 1/2/2 lag 10
device(config-vlan-555)# interface ve 555
device(config-vlan-555)# ipv6 access-group scale25 in
device(config-vlan-555)# ipv6 access-group scale15 out
device(config-vlan-555)# mac access-group mac_acl1 in
device(config-vlan-555)# ip access-group 123 in
device(config-vlan-555)# ip access-group 134 out
device(config-vlan-555)# exit
device(config)#
```

The following example applies IPv6, IPv4, and MAC ACLs to tagged Ethernet port 1/2/2 specifically within LAG 10 and enables logging of traffic that matches any statement within the applied ACLs that contains the **log** keyword.

```
device# configure terminal
device(config)# vlan 558 by port
device(config-vlan-558)# tagged ethe 1/2/2 lag 10
device(config-vlan-558)# ipv6 access-group scale12 in lag 10 logging enable
device(config-vlan-558)# mac access-group mac_acl in lag 10
device(config-vlan-558)# ip access-group 134 in lag 10 logging enable
```

vlan-config

Configures Virtual Local Area Network (VLAN) tasks such as all or selective ports to a VLAN, moving untagged port membership between VLANs, and removing ports from a VLAN.

Syntax

vlan-config add [**all-tagged** | **tagged-vlan**]

vlan-config move [**untagged***VLAN ID*]

vlan-config remove[**all** | **vlan***VLAN ID*]

Command Default

Active vlan preconfiguration is not a mandatory for **vlan-config add tagged-vlan** command. This command can create new VLAN even if it is not present. Maximum allowed discrete or set of VLAN(s) is 1024.

Parameters

add
Adds a port to all the configured active VLANs.

all-tagged
Adds an interface to all VLANs as tagged members.

tagged-vlan
Adds an interface to selective VLANs as tagged members.

move
Moves an untagged port from one VLAN to another VLAN.

untagged *VLAN ID*
Moves the specific untagged VLAN port to another VLAN. It also moves the default VLAN of a dual mode port to another VLAN. The VLAN ID ranges from 1 to 4095.

remove
Removes a tagged or an untagged port from the VLAN.

all
Removes all VLANs from the physical port.

vlan *VLAN ID*
Removes the VLAN as specified by the VLAN ID from the physical port. The VLAN ID ranges from 1 to 4095.

Modes

Interface configuration mode

Usage Guidelines

Using the **vlan-config add** command, you can create a new VLAN and add the interface to it, if interface being added is the first interface. The command will also add port to non-active and non configured VLAN. It is not available on a private VLAN-enabled port and is not applicable to VLAN groups, MCT VLANs, GVRP, and flex-auth ports. The command is available in MIF mode. The maximum VLAN or VLAN range supported in a single input is 300.

NOTE
The command line prompt will not be available for the next command until the port is added to all VLANs in the system. The command is a non-savable command, which adds the interface as a tagged member. Command will not be available on a PVLAN Enabled port.

Using the **vlan-config move** command, you can move untagged ports from one VLAN to another without having to remove an untagged port from the old VLAN and to again add it to the new VLAN. This command can run on a multiple interface command mode.

NOTE

- If a new VLAN is not configured, the system allows creation of a new VLAN and the port is added to it.
- The VLAN port that is being moved should either be a dual mode port or should be part of a non-default VLAN. A port cannot be moved to or from a private VLAN.

Examples

The following example adds an interface to all tagged VLANs in the system.

```
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9) vlan-config add all-tagged
```

The following example adds an interface to selective VLANs in the system.

```
ddevice(config-if-e40000-1/1/1)#vlan-config add tagged-vlan
      DECIMAL   VLAN number
   <cr>
device(config-if-e40000-1/1/1)#vlan-config add tagged-vlan 101 102 103
INFO : Command may take approximately 0 Seconds
device(config-if-e40000-1/1/1)#
Port(s) ethe 1/1/1  add to 1 vlan(s) complete.....
device(config-if-e40000-1/1/1)#
```

The following example moves the specific untagged membership of 1/1/9 from a VLAN to VLAN 40 in the system.

```
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9) vlan-config move untagged 40
```

The following example removes all VLANs from the physical port in the system.

```
device(config)# interface ethernet 1/1/9
device(config-if-e1000-1/1/9) vlan-config remove all
```

The following example removes selective VLANs from the physical port in the system.

```
device(config-if-e40000-1/1/1)#vlan-config remove vlan 107 108 109 110
device(config-if-e40000-1/1/1)#
```

History

Release version	Command history
08.0.50	This command was introduced.

Release version	Command history
08.0.70	This command was modified.

vlan-group

Configures a VLAN group.

Syntax

vlan-group *num* **vlan** *vlan-id* [**to** *vlan-id*]

no vlan-group *num* **vlan** *vlan-id* [**to** *vlan-id*]

Command Default

A VLAN group is not configured.

Parameters

num

Specifies the group VLAN ID. The values can be from 1 through 32.

vlan *vlan-id*

Specifies the starting VLAN ID to create a VLAN group.

to *vlan-id*

Specifies the ending VLAN ID. This is a continuous range of individual VLAN IDs.

Modes

Global configuration mode

Usage Guidelines

Specify the low VLAN ID first and the high VLAN ID second. The command adds all of the specified VLANs to the VLAN group. You can add up to 256 VLANs with the command at one time.

If a VLAN within the range you specify is already configured, or if the range contains more than 256 VLANs, the VLAN group is not created and an error message is displayed.

To add more than 256 VLANs, enter the **add-vlan** command in VLAN group configuration mode.

To remove one or more VLANs, enter the **remove-vlan** command in VLAN group configuration mode.

The **no** form of the command deletes the VLAN group.

Examples

The following example configures VLAN group 1.

```
device(config)# vlan-group 1 vlan 2 to 255
```

vni-counters

Enable VXLAN Network Identifier (VNI) counters for a VXLAN overlay-gateway.

Syntax

vni-counters vni *vni-id* [**stats**] [**detailed**]

no vni-counters vni *vni-id* [**stats**] [**detailed**]

Command Default

VNI counters are disabled for an overlay-gateway.

Parameters

vni *vni-id*

Starts the VNI that will be mapped to the VLAN. Valid values range from 1 through 16777215.

stats

Enables VFI counters for the VNI.

detailed

Specifies that statistics from Access Virtual Ports are also collected, along with the VNI counters.

Modes

Overlay-gateway configuration mode

Usage Guidelines

VNI counters can be enabled for a maximum of 10 VNIs at a time.

The **no** form of the command disables VNI counters for the VXLAN overlay-gateway.

Examples

The following example enables VNI counters for a VXLAN overlay-gateway. It also enables VFI counters for the VNI. Statistics from Access Virtual Ports are also collected.

```
device# configure terminal
device(config)# overlay-gateway gate1
device(config-overlay-gw-gate1)# vni-counters vni 30000 stats detailed
```

History

Release version	Command history
09.0.10b	This command was introduced.

voice-vlan

Creates a voice VLAN at the global level.

Syntax

voice-vlan *vlan-id*

no voice-vlan *vlan-id*

Command Default

A global voice VLAN is not configured.

Parameters

vlan-id

Specifies the VLAN identifier. The range is from 1 through 4095 (excluding all reserved VLANs).

Modes

Authentication configuration mode

Usage Guidelines

The global voice VLAN is the default VLAN for voice traffic and is used:

- When the RADIUS server does not return VLAN information after authentication success.
- When the RADIUS server is not reachable for first authentication and **auth-timeout-action** is set to **success**.
- Any time that the RADIUS server is not reachable, **auth-timeout-action** is set to **critical vlan**, and **voice-vlan** is configured for critical action.
- When authentication fails, **auth-fail-action** is set to **restricted** and **voice-vlan** is configured for restricted action.

The **no** form of the command removes the global voice VLAN configuration.

Examples

The following example shows how to configure VLAN 4 as the global voice VLAN.

```
device# configure terminal
device(config)# authentication
device(config-authen)# voice-vlan 4
```

History

Release version	Command history
08.0.61	This command was introduced.

vrf

Configures a Virtual Routing and Forwarding (VRF) and enters VRF configuration mode.

Syntax

vrf*vrf-name*

no vrf*vrf-name*

Command Default

A VRF is not created.

Parameters

vrf-name

Specifies the name of the VRF. The name can be up to 255 characters.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the VRF.

Examples

The following example configures a VRF and enters VRF configuration mode.

```
device(config)# vrf vrf1
device(config-vrf-vrf1)#
```

vrf forwarding

Assigns a VRF routing instance to an interface.

Syntax

vrf forwarding *vrf-name*

no vrf forwarding *vrf-name*

Command Default

The default VRF.

Parameters

vrf-name

Specifies the name of the VRF that the interface is being assigned to.

Modes

Interface configuration mode

Usage Guidelines

When the VRF is configured on a tunnel, all IPv4 and IPv6 addresses are removed. The tunnel loopback configuration is removed.

The **no** form of the command removes the VRF routing instance assigned to an interface. IP addresses and protocol configuration on this Layer 3 interface are removed.

Examples

The following examples assigns a VRF instance to the Ethernet interface 1/1/1.

```
device(config)# interface ethernet 1/1/1
device(config-if-e1000-1/1/1)# vrf forwarding guest
```

The following example shows how to configure a forwarding VRF named red on an IPsec tunnel interface identified as 1.

```
device(config)# interface tunnel 1
device(config-tnif-1)# tunnel mode ipsec ipv4
device(config-tnif-1)# vrf forwarding red
```

vsrp

Configures VSRP on a device.

Syntax

vsrp vrid *vrid-num*

no vsrp vrid *vrid-num*

Command Default

VSRP is not configured.

Parameters

vrid *vrid-num*

Configures the VRID for the VLAN. The VRID range is from 1 through 255.

Modes

VLAN configuration mode

Usage Guidelines

The **no** form of the command clears the VSRP configuration.

Examples

The following example shows how to configure the VRID.

```
device(config)# vlan 200
device(config-vlan-200)# vsrp vrid 1
```

vsrp auth-type

Configures a simple text-string as a password in packets sent on the interface.

Syntax

vsrp auth-type { **no-auth** | **simple-text-auth** *password* }

no vsrp auth-type { **no-auth** |**simple-text-auth** *password* }

Command Default

By default, no authentication is configured.

Parameters

auth-type
Configures the VSRP authentication type.

no-auth
Configures the VRID and interface without authentication.

simple-text-auth*password*
Configures the VRID to use simple text authentication with a password up to 8 characters long.

Modes

VLAN configuration mode

Usage Guidelines

If the interfaces on which you configure the VRID use authentication, the VSRP packets on those interfaces also must use the same authentication.

- No authentication - The interfaces do not use authentication.
- Simple - The interfaces use a simple text-string as a password in packets sent on the interface. If the interfaces use simple password authentication, the VRID configured on the interfaces must use the same authentication type and the same password.

NOTE
The simple text password authentication configuration goes through even if VSRP VRID is not configured.

Examples

The following example shows how to configure a simple password.

```
device(config)# vlan 200
device(config-vlan-200)# vsrp auth-type simple-text-auth ourpword
```

vsrp-aware

Configures the security features on a VSRP-aware device.

Syntax

vsrp-aware vrid *vrid* **tc-vlan-flush**

no vsrp-aware vrid *vrid* **tc-vlan-flush**

vsrp-aware vrid *vrid* { **no-auth** | **simple-text-auth** *password* } { **port-list** { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] } }

no vsrp-aware vrid *vrid* { **no-auth** | **simple-text-auth** *password* } { **port-list** { [**ethernet** *unit/slot/port* [**to** *unit/slot/port*] ...] [**lag** *lag-id* [**to** *lag-id*] ...] } }

Command Default

VSRP-aware security features are not configured.

Parameters

vrid *vrid*

Specifies the VRID of the VSRP device. The valid range is from 1 through 255.

tc-vlan-flush

Flushes the MAC addresses learned on the VSRP-aware VLAN upon topology change.

no-auth

Configures no authentication as the preferred VSRP-aware security method. The VSRP device will not accept incoming packets that have authentication strings.

simple-text-auth *password*

Defines an authentication string to accept incoming VSRP Hello packets. The password can be up to 8 characters in length.

port-list

Specifies the set of ports to include in the configuration.

ethernet *unit/slot/port* [**to** *unit/slot/port*]

Specifies the Ethernet ports, set of ports, or range of ports.

lag *lag-id* [**to** *lag-id*]

Specifies a LAG, set of LAGs, or range of LAGs to include in the port list.

to

Specifies a range of Ethernet interfaces or LAG IDs.

Modes

VLAN configuration mode

Usage Guidelines

When the **tc-vlan-flush** option is enabled, MAC addresses will be flushed at the VLAN level, instead of at the port level. MAC addresses will be flushed for every topology change received on the VSRP-aware ports. When you configure the **tc-vlan-flush** option on a VSRP-aware device, and the device receives VSRP Hello packets from the VSRP master, VSRP authentication is automatically configured. However, if the VSRP-aware device does not receive VSRP Hello packets from the VSRP master when the **tc-vlan-flush** option is configured, you must manually configure VSRP authentication.

You can specify a list of ports, separated by a space, or a range of ports, or you can combine lists and ranges.

You can combine individual Ethernet ports, Ethernet port ranges, LAGs, and LAG ranges in the same command if you wish.

The **no** form of the command clears the security features on the VSRP-aware device.

Examples

The following example shows how to configure the MAC addresses to be flushed at the VLAN level.

```
device(config)# vlan 200
device(config-vlan-200)# vsrp-aware vrid 11 tc-vlan-flush
```

The following example shows how to configure a simple authentication string for the VSRP.

```
device(config)# vlan 10
device(config-vlan-10)# vsrp-aware vrid 3 simple-text-auth pri-key
```

The following example shows how to configure no authentication for the VSRP.

```
device(config)# vlan 10
device(config-vlan-10)# vsrp-aware vrid 2 no-auth
```

The following example shows how to configure no authentication for a range of Ethernet ports.

```
device(config)# vlan 10
device(config-vlan-10)# vsrp-aware vrid 4 no-auth port-list ethernet 1/1/1 to 1/1/4
```

History

Release version	Command history
08.0.61	This command was updated to include the LAG ID option.

web-management

Configures web management access options.

Syntax

web-management [**connection-receive-timeout** *timeout-value* | **http**| **https** | **session-timeout** *time*| **tcp-port** *port-num*]

no web-management [**connection-receive-timeout** *timeout-value*| **http** | **https** | **session-timeout** *time*| **tcp-port** *port-num*]

Command Default

Web management is enabled.

Parameters

connection-receive-timeout*timeout-value*
: Specifies the web connection receive timeout.

http
: Enables web management for HTTP access.

https
: Enables web management for HTTPS access.

session-timeout*time*
: Configures the web session timeout in seconds. Valid values are from 5 through 65000.

tcp-port*port-num*
: Configures the HTTP port. The default port is 80.

Modes

Global configuration mode

Usage Guidelines

The **no** form of the command removes the web management configurations.

Examples

The following example shows how to enable web management for HTTPS access.

```
device(config)# web-management https
```

History

Release version	Command history
09.0.00	This command was modified to remove the following keywords: • **enable**{**vlan***vlan-id* | **ethernet***unit/slot/port*} • **allow-no-password** • frame • front-panel • list-menu • page-menu • refresh • hp-top-tools

webauth

Configures a Web Authentication VLAN and enters the Web Authentication configuration mode.

Syntax

webauth

no webauth

Modes

VLAN configuration mode

Usage Guidelines

Use the **enable** command in the Web Authentication configuration mode to enable Web Authentication.

Tthe **no** form of the command removes the Web Authentication VLAN.

Examples

The following example shows how to configure a Web Authentication VLAN.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config(config-vlan-10-webauth)#
```

The following example deletes a Web Authentication VLAN.

```
device(config)# vlan 10
device(config-vlan-10)# no webauth
```

webauth-redirect-address

Configures a redirect address for Web Authentication to prevent the display of error messages saying that the certificate does not match the name of the site.

Syntax

webauth-redirect-address *address-string*

no webauth-redirect-address [*address-string*]

Command Default

By default, the Web Authentication address returned to the browser is the IP address of the switch.

Parameters

address-string

Specifies the redirect address. You can specify up to 64 alphanumeric characters.

Modes

Global configuration mode

Web Authentication configuration mode

Usage Guidelines

You can enter any value for the address string , but entering the name on the security certificate prevents the display of error messages saying that the security certificate does not match the name of the site.

On a Layer 2 device, the command is supported in Global configuration mode and on a Layer 3 device the command is supported in Web Authentication configuration mode.

The **no** form of the command resets the redirect address to that of the IP address of the switch.

Examples

The following example shows how to set the Web Authentication redirect address on a Layer 3 switch.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webauth-redirect-address my.domain.net
```

webpage custom-label

Customizes the User ID or Password label on the Web Authentication page.

Syntax

webpage custom-label { **userid-label** | **password-label** { **"** *name* **"** } }

no webpage custom-label { **userid-label** | **password-label** { **"** *name* **"** } }

Command Default

By default, the label User ID and entry field are displayed in the Web Authentication window, and the Password and entry field are displayed in the underlying window when a valid User ID is entered.

Parameters

userid-label " *name* **"**

Changes the User ID label on the Web Authentication page to the text specified in quotes.

password-label " *name* **"**

Changes the Password label on the Web Authentication page to the alphanumeric string specified in quotes. The name string has a maximum length of 32 characters.

Modes

Web Authentication configuration mode

Usage Guidelines

The **no** form of the command restores the Web Authentication page defaults, so that the default labels User ID and Password lare displayed during the authentication process.

You can use the **webpage remove-userid-label** command to remove the User ID label and text field from the Web Authentication page.

You can use the **show running-config webauth** command to view the configured text for Web Authentication pages.

Examples

The following example changes the User ID label to read "YourName".

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage custom-label userid-label "YourName"
```

The following example changes the Password label to read "PIN".

```
device(config-vlan-10-webauth)# webpage custom-label password-label "PIN"

device(config-vlan-10-webauth)# show running-config vlan 10
vlan 10 by port
tagged ethe 1/1/1 lag 1
untagged ethe 3/1/4
webauth
  no secure-login
  trust-port lag 1
  uplink-port lag 1
  webpage custom-text top "Welcome to Crawler Network One"
  webpage custom-label username-label "YourName"
  webpage custom-label password-label "PIN"
  enable
!
```

History

Release version	Command history
09.0.10	This command was introduced.

webpage custom-text

Customizes the text that appears on the title bar, login button, header, and footer on the Web Authentication pages.

Syntax

webpage custom-text { **bottom** *footer* | **login-button** *button-text* | **title** *title-text* | **top** *header* }

no webpage custom-text { **bottom** *footer* | **login-button** *button-text* | **title** *title-text* | **top** *header* }

Command Default

The default header text is "Welcome to Ruckus Networks Web Authentication Homepage".

The default title bar text is "Web Authentication".

The default login button text is "Login".

The default footer text is "This network is restricted to authorized users only. Violators may be subjected to legal prosecution. Activity on this network is monitored and may be used as evidence in a court of law. Copyright <*year*> Ruckus Networks."

Parameters

bottom *footer*
: Customizes the footer on a Web Authentication page. Specify up to 255 alphanumeric characters for the string.

login-button *button-text*
: Customizes the login button that appears on the bottom of the Web Authentication Login page. Enter up to 32 alphanumeric characters for the string.

title *title-text*
: Customizes the title bar that appears on all Web Authentication pages. You can specify up to 128 alphanumeric characters.

top *header*
: Customizes the header that appears on all Web Authentication pages. You can specify up to 255 alphanumeric characters.

Modes

Web Authentication configuration mode

Usage Guidelines

You can use the **show webauth** command to view the configured text for Web Authentication pages.

The **no** form of the command resets the text to the default.

Examples

The following example shows how to customize the text on the title bar.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage custom-text title "Ruckus Secure Access Page"
```

The following example shows how to customize the header that appears on all Web Authentication pages.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage custom-text top "Welcome to Network One"
```

The following example shows how to customize the login button that appears on the bottom of the Web Authentication Login page.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage custom-text login-button "Press to Log In"
```

The following example shows how to customize the footer that appears on all Web Authentication pages.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage custom-text bottom "Network One Copyright 2010"
```

webpage logo

Customizes the logo that appears on all Web Authentication pages and its placement.

Syntax

webpage logo { **copy tftp** { *ipv4-address* | *ipv6-address* } *file-name* | **align** { **left** | **center** | **right** } }

no webpage logo { **copy tftp** { *ipv4-address* | *ipv6-address* } *file-name* | **align** { **left** | **center** | **right** } }

Command Default

By default, the logo is left-aligned at the top of the page.

Parameters

copy tftp
: Copies an image from the TFTP server to the switch.

ipv4-address
: Specifies the IPv4 address of the TFTP server.

ipv6-address
: Specifies the IPv6 address of the TFTP server.

file-name
: Specifies the name of the file that must be copied from the TFTP server to the switch.

align
: Configures the placement of the logo on the Web Authentication pages.

  left
  : Aligns the logo to the left at the top of the page.

  right
  : Aligns the logo to the right at the top of the page.

  center
  : Aligns the logo to the center at the top of the page.

Modes

Web Authentication configuration mode

Usage Guidelines

To customize the banner image, use TFTP to upload an image file from a TFTP server to the FastIron switch. The image file can be in the jpg, bmp, or gif format, and its file size must be 64 KB or less. When you upload a new image file, it willl overwrite the existing image file.

The **no** form of the command deletes the logo from all Web Authentication pages and removes it from flash memory.

NOTE
The **webpage logo** command downloads the image file and stores it in the device flash memory. Therefore, it is not necessary to follow this command with a **write memory** command.

Examples

The following example shows how to replace the existing logo with a new one.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage logo copy tftp 10.10.5.1 ruckuslogo.gif
```

The following example shows how to right-justify the log at the top of the page.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage logo align right
```

webpage remove-userid-label

Removes the User ID label and text field from the Web Authentication page.

Syntax

webpage { **remove-userid-label** }

no webpage { **remove-userid-label** }

Command Default

By default, the label User ID and entry field are displayed in the Web Authentication window, and the Password and entry field is displayed on the underlying window when a valid User ID is entered.

Modes

Web Authentication configuration mode

Usage Guidelines

The **no** form of the command restores the Web Authentication page defaults, so that the User ID label and text field are displayed during the authentication process.

Before you remove the user ID label, be sure that the local user ID and password match those stored in the authentication server.

You can use the **show webauth** command to view the configured text for Web Authentication pages.

Examples

The following example removes the User ID label and text field.

```
device# configure terminal
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage remove-userid-label
device(config-vlan-10-webauth)# end
device#
```

History

Release version	Command history
09.0.10	This command was introduced.

webpage terms

Customizes the text box that appears on the Web Authentication Login page.

Syntax

webpage terms copy tftp { *ipv4-address* | *ipv6-address* } *file-name*

no webpage terms copy tftp { *ipv4-address* | *ipv6-address* } *file-name*

Command Default

By default, the text box is empty and is not visible.

Parameters

copy tftp

Copies an ASCII text file from a TFTP server to the switch.

ipv4-address

The IPv4 address of the TFTP server.

ipv6-address

The IPv6 address of the TFTP server.

file-name

Specifies the name of the text file on the TFTP server.

Modes

Web Authentication configuration mode

Usage Guidelines

The text file size must not exceed 2 KB.

NOTE
The **webpage terms** command downloads the text file and stores it in the device flash memory. Therefore, it is not necessary to follow this command with a **write memory** command.

The **no** form of the command reverts back to the default; that is, the text box is empty and not visible.

Examples

The following example shows how to create or replace a text box.

```
device(config)# vlan 10
device(config-vlan-10)# webauth
device(config-vlan-10-webauth)# webpage terms copy tftp 10.10.5.1 policy.txt
```

white-list (Web Authentication)

Adds IPv4 or FQDN addresses allowed access during authentication along with the required Captive-Portal server, DNS servers, or DHCP servers.

Syntax

white-list *ID* { *FQDN* | *ip-address/mask* }

no white-list *ID*

no white-list *ID* { *FQDN* | *ip-address/mask* }

Command Default

Depending on the protocol used, DNS and DHCP packets along with the Captive Portal server are allowed access, but no pre-configured servers or hosts are allowed access for Web Authentication.

Parameters

ID

Decimal number that identifies a specific white-list. Must be in the range 1 through 100.

FQDN

The fully qualified domain name for a permitted server (ASCII string).

ipv4 address

An IPv4 address for a permitted server, in the form A.B.C.D./L (where L is the network mask) or A.B.C.D x.x.x.x (where x.x.x.x is the subnet mask). A specific IP address can be entered with a subnet mask.

Modes

Web Authentication configuration sub-mode under a specific VLAN

Usage Guidelines

The **no** form of the **white-list** command followed the ID or by the ID and a previously specified address removes the specified address from the set of servers and hosts permitted during Web Authentication.

Web Authentication can be configured only at the VLAN level.

Up to 100 Web Authentication white-lists can be configured.

Configured white-lists are displayed in **show webauth** and **show running-config vlan** command output.

Examples

The following example configures three Web Authentication white-lists: an FQDN (www.commscope.com), an IPv4 subnet, and an IPv4 server address and confirms their configuration with the **show webauth** and **show running-config vlan** commands.

```
device# configure terminal
device(config)# vlan 300
device(config-vlan-300)# webauth
device(config-vlan-300-webauth)# white-list 10 www.commscope.com
White-list server address 104.18.14.129 resolved
device(config-vlan-300-webauth)# white-list 30 192.168.0.1/24
device(config-vlan-300-webauth)# white-list 35 192.168.12.2
Incomplete command.
device(config-vlan-300-webauth)# white-list 35 192.168.12.2 0.0.0.255

device(config-vlan-300-webauth)# show webauth vlan 300
==========================================================================
WEB AUTHENTICATION (VLAN 300): Disable (Default)
attempt-max-num: 5 (Default)
host-max-num: 0 (Default)
block duration: 90 (Default)
cycle-time: 600 (Default)
port-down-authenticated-mac-cleanup: Enable (Default)
reauth-time: 60
authenticated-mac-age-time: 3600 (Default)
webauth-redirect-address: none (Default)
dns-filter: Disable (Default)
white-list 10 104.18.14.129
white-list 30 192.168.0.1 0.0.0.255
white-list 35 192.168.12.2 0.0.0.255
white-list 60 10.177.17.67 0.0.0.127
authentication mode: captive portal
Radius accounting: Enable (Default)
Trusted port list: ether 3/1/4, lag 1
Secure Login (HTTPS): Enable (Default)
Host statistics:
Number of hosts dynamically authenticated: 0
Number of hosts statically authenticated: 0
Number of hosts dynamically blocked: 0
Number of hosts statically blocked: 0
Number of hosts authenticating: 0

device(config-vlan-300-webauth)# show running-config vlan
30 vlan VLAN running-config section

device(config-vlan-300-webauth)# show running-config vlan 300
vlan 300 by port
tagged ethe 3/1/48 lag 1
untagged ethe 1/1/23
router-interface ve 300
webauth
captive-portal profile captive_profile1
reauth-time 60
white-list 10 104.18.14.129
white-list 30 192.168.0.1 0.0.0.255
white-list 35 192.168.12.2 0.0.0.255
white-list 60 10.177.17.67 0.0.0.127
auth-mode passcode length 16
auth-mode passcode static 1234
auth-mode captive-portal
trust-port lag 1
!
```

History

Release version	Command history
9.0.00	This command was introduced.

wpad

Specifies the Proxy Auto-Config (PAC) file location using the Web Proxy Auto-Discovery (WPAD) protocol.

Syntax

wpad *"ASCII -string"*

no wpad *"ASCII -string"*

Parameters

ASCII-string
The full network location of the PAC file.

Modes

DHCP server pool configuration mode

Usage Guidelines

The **no** form of the command removes the specified string from the server pool.

Examples

The following example specifies the location of the PAC file.

```
device(config)# ip dhcp-server pool cabo
device(config-dhcp-cabo)# wpad http://172.26.67.243:8080/wpad.dat
```

History

Release version	Command history
08.0.40	This command was introduced.

write terminal

Displays the running configuration.

Syntax

write terminal

Modes

User EXEC mode

Usage Guidelines

This command performs the same function as the **show running-config** command.

Examples

The following example displays the running configuration.

```
device# write terminal

Current configuration:
!
ver 10.0.00_B10T233
!
stack unit 1
  module 1 icx7850-48f-sf-port-management-module
  module 2 icx7800-100g-8port-800g-module
  stack-port ethernet 1/2/1
  stack-port ethernet 1/2/5
!
!
cfg-archive revert-option archive-size 20
!

!
vlan 1 name DEFAULT-VLAN by port
!
vlan 10 by port
!

ip route 0.0.0.0/0 10.176.192.1
!
!
ip show-portname
ip tftp blocksize 8192
fdp run
!
!
!
interface ethernet 1/1/1
 speed-duplex 1000-full
!
interface ethernet 1/1/2
 speed-duplex 1000-full
!
interface ethernet 1/1/3
 no fdp enable
 no cdp enable
 speed-duplex 1000-full
 no spanning-tree
 sflow forwarding
 sflow sample 10000
!
interface ethernet 1/1/4
 speed-duplex 1000-full
!
interface ve 10
!
!
interface tunnel 1
!
!
end
```

xwindow-manager

Specifies the IP addresses of systems that are running the X Window System Display Manager and are available to the client.

Syntax

xwindow-manager *ip-address* [*ip-address*] [*ip-address*]

no xwindow-manager *ip-address* [*ip-address*] [*ip-address*]

Parameters

ip-address

Specifies an IP address of the system running the X Window System Display Manager.

Modes

DHCP server pool configuration mode

Usage Guidelines

You can configure a maximum of three X Window System Display Manager IP addresses in a DHCP server pool.

The **no** form of the command removes the X Window System Display Manager IP addresses from the DHCP server pool.

Examples

The following example configures the IP addresses of systems that are running the X Window System Display Manager in a DHCP server pool.

```
device(config)# ip dhcp-server pool cabo
device(config-dhcp-cabo)# xwindow-manager 10.38.12.1 10.38.12.3 10.38.12.5
```

History

Release version	Command history
08.0.30b	This command was introduced.



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