Lenovo Network

Command Reference

For Lenovo Cloud Network Operating System 10.7

Lenovo™

Note: Before using this information and the product it supports, read the general information in the *Safety information and Environmental Notices* and *User Guide* documents on the Lenovo *Documentation* CD and the *Warranty Information* document that comes with the product.

Contents

Preface

This *Command Reference* describes the commands included in the Lenovo Cloud Network Operating System 10.7 firmware and how to use them. This document covers the following Lenovo RackSwitches:

- *RackSwitch G8272*
- *RackSwitch G8296*
- *RackSwitch G8332*
- *ThinkSystem NE1032 RackSwitch*
- *ThinkSystem NE1032T RackSwitch*
- *ThinkSystem NE1072T RackSwitch*
- *ThinkSystem NE10032 RackSwitch*
- *ThinkSystem NE2572 RackSwitch*

For documentation on how to configure and use the Lenovo Cloud Network Operating System 10.7 firmware, see the *Lenovo Network Application Guide for Lenovo Cloud Network Operating System 10.7*.

For documentation on the Lenovo APIs, see the *REST API Programming Guide* and the *Python Programming Guide*.

For documentation on installing the switches physically, see the Lenovo Installation Guide for the corresponding switch:

- *Lenovo RackSwitch G8272 Installation Guide*
- *Lenovo RackSwitch G8296 Installation Guide*
- *Lenovo RackSwitch G8332 Installation Guide*
- *Lenovo ThinkSystem NE1032 RackSwitch Installation Guide*
- *Lenovo ThinkSystem NE1032T RackSwitch Installation Guide*
- *Lenovo ThinkSystem NE1072T RackSwitch Installation Guide*
- *Lenovo ThinkSystem NE10032 RackSwitch Installation Guide*
- *Lenovo ThinkSystem NE2572 RackSwitch Installation Guide*

Who Should Use This Guide

This guide is intended for network installers and system administrators engaged in configuring and maintaining a network. The administrator should be familiar with Ethernet concepts, IP addressing, Spanning Tree Protocol, and SNMP configuration parameters.

What You'll Find in This Guide

This guide will help you plan, implement, and administer Cloud NOS software. Where possible, each section provides feature overviews, usage Example, and configuration instructions. The following information is covered:

- Chapter 2, "CNOS Basics", explains how to get around in CNOS and describes the commands you can enter from User EXEC Mode.

- Chapter 1, "Privileged EXEC Mode Commands", describes Privileged EXEC Mode and the commands available in it.

- Chapter 3, "Debugging Commands", describes all available debugging commands.

- Chapter 4, "Configuration Mode Commands", describes commands available in Configuration Mode.

- Chapter 5, "Interface Mode Commands", describes commands available in Interface Mode.

- Chapter 6, "Line Mode Commands", describes commands available in Line Configuration Mode

- Chapter 7, "Class Map Mode Commands", describes commands available in Class Map Mode

- Chapter 8, "Route Map Mode Commands", describes commands available in Route Map Mode.

- Chapter 9, "BGP Configuration Mode Commands", describes commands available in BGP Configuration Mode.

- Chapter 10, "Address Family Mode Commands", describes the commands for entering and using BGP Address Family Mode.

- Chapter 11, "Neighbor Mode Commands", describes the commands for entering and using BGP Neighbor Mode.

- Chapter 12, "Neighbor Address Family Commands", describes the commands for entering and using BGP Neighbor Address Family Mode.

- Chapter 13, "OSPF Configuration Mode Commands", describes commands available in OSPF Configuration Mode.

- Chapter 14, "Virtual Link Mode Commands", describes the commands for entering and using OSPF Virtual Link Mode.

- Chapter 15, "TACACS+ Server Mode Commands", describes commands available in TACACS+ Server Configuration Mode.

- Chapter 16, "LDAP Mode Commands", describes commands available in LDAP Server Configuration Mode.

- Chapter 17, "RADIUS Server Mode Commands", describes commands available in RADIUS Server Configuration Mode.

- Chapter 18, "SPAN Session Mode Commands", describes commands available in SPAN Session Configuration Mode.

- Chapter 19, "Control Plane Mode Commands", describes commands available in Control Plane Configuration Mode.

- Chapter 20, "Key Chain Mode Commands", describes commands available in Key Chain Configuration Mode.

- Chapter 21, "IP ACL Mode Commands", describes commands available in IP ACL Configuration Mode.

- Chapter 22, "ARP ACL Mode Commands", describes commands available in ARP ACL Configuration Mode.

- Chapter 23, "MAC ACL Mode Commands", describes commands available in MAC ACL Configuration Mode.

- Chapter 24, "MST Mode Commands", describes commands available in MST Configuration Mode.

- Chapter 25, "PKI Mode Commands", describes commands available in Public Key Infrastructure (PKI) Configuration Mode.

- Chapter 26, "Policy Map Mode Commands", describes commands available in Policy Map Configuration Mode.

- Chapter 27, "VLAN Mode Commands", describes commands available in VLAN Configuration Mode.

- Chapter 28, "VRRP Mode Commands", describes commands available in VRRP Configuration Mode.

- Chapter 30, "VDM Commands", describes commands available in VDM Configuration Mode.

- Chapter 31, "EVC Service Mode Commands", describes commands available in EVC Service Configuration Mode.

- Chapter 32, "Show Commands", describes commands available in various modes that display information and statistics about the switch.

- Appendix A, "Getting help and technical assistance", tells you who to contact with any questions about this product.

- Appendix B, "Notices", contains safety and environmental notices.

Typographic Conventions

The following table describes the typographic styles used in this book.

Table 1. *Typographic Conventions*

Typeface or Symbol	Meaning	Example
ABC123	This type is used for names of commands, files, and directories used within the text. It also depicts on-screen computer output and prompts.	View the readme.txt file. Switch#
ABC123	This bold type appears in command Example. It shows text that must be typed in exactly as shown.	Switch# **sys**
<ABC123>	This italicized type appears in command Example as a parameter placeholder. Replace the indicated text with the appropriate real name or value when using the command. Do not type the brackets. This also shows book titles, special terms, or words to be emphasized.	To establish a Telnet session, enter: Switch# **telnet** *<IP address>* Read your *User's Guide* thoroughly.
{}	Command items shown inside brackets are mandatory and cannot be excluded. Do not type the brackets.	Switch# **ls {-a}**
[]	Command items shown inside brackets are optional and can be used or excluded as the situation demands. Do not type the brackets.	Switch# **ls [-a]**
|	The vertical bar (**|**) is used in command Example to separate choices where multiple options exist. Select only one of the listed options. Do not type the vertical bar.	Switch# **set {left|right}**
AaBbCc123	This block type depicts menus, buttons, and other controls that appear in Web browsers and other graphical interfaces.	Click the **<Save>** button.

Chapter 1. Privileged EXEC Mode Commands

This chapter describes how to enter Privileged EXEC Mode and the commands available in this mode.

enable

Enters Privileged EXEC Mode.

Syntax

```
enable
```

Modes

User EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters Privileged EXEC Mode:

```
Switch> enable

Switch#
```

disable

Turns off Privileged EXEC Mode and returns you to User EXEC Mode.

Syntax

disable

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables Privileged EXEC Mode:

```
Switch# disable

Switch>
```

clock set

Configures the system time and date.

Syntax

clock set *<time>* *<day>* *<month>* *<year>*

where:

Parameter	Function
time	The *time* format is HH:mm:ss, where: ● HH is the hour of the day (range is 00 to 24) ● mm is the minute of the hour (range is 00 to 60) ● ss is the second of the minute (range is 00 to 60)
day	The *day* of the month (range is 1 to 31).
month	The *month* of the year (range is January to December).
year	The *year* of the calendar (range is 2000 to 2030).

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command set the system time to 12 hours 30 minutes and 00 seconds and the system date to January 1st 2016:

```
Switch# clock set 12:30:00 1 January 2016
Switch# show clock

12:30:03 UTC Fri Jan  1 2016
```

configure

Enters Configuration Mode.

Syntax

```
configure [terminal]
```

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters Configuration Mode:

```
Switch# configure terminal
Switch(config)#
```

copy alias-config

Copies the specified command alias configuration file to the specified remote server.

Syntax

`copy alias-config {ftp|scp|sftp|tftp} [`*server URL***`] [vrf {default|management}]`**

where:

Parameter	Description
`ftp`	Uses File Transfer Protocol (FTP).
`scp`	Uses Secure Copy Protocol (SCP).
`sftp`	Uses Secure File Transfer Protocol (SFTP).
`tftp`	Uses Trivial File Transfer Protocol (TFTP).
server URL	The URL address of the server.
`vrf default`	Copies using the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Copies using the management VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command copies the command alias configuration file using TFTP:

```
Switch# copy alias-config tftp tftp://10.112.71.18/aliasConfig.cfg vrf
default
```

copy file

Copies the specified file to a remote server.

Syntax

```
copy file
{all|bgpd|config-10-6|hostpd|imi|imish|nsm|ospfd|show-redire
ct} {ftp|sftp|tftp|usb1 <file name>} [<server URL>] [timeout <timeout
interval>] [vrf {default|management}]
```

```
copy file
{all|bgpd|config-10-6|hostpd|imi|imish|nsm|ospfd|show-redire
ct} scp [<server URL>] [timeout <timeout interval>] [vrf {default|
management}]
```

where:

Parameter	Function
all	Copies all binary files.
bgpd	Copies Border Gateway Protocol (BGP) daemon files.
config-10-6	Copies 10.6 or earlier release startup-config file.
hostpd	Copies Host Protocol daemon files.
imi	Copies Integrated Management Interface (IMI) files.
imish	Copies Integrated Management Interface Shell (IMISH) files.
nsm	Copies Network Service Module (NSM) files.
ospfd	Copies Open Shortest Path First (OSPF) daemon files.
show-redirect	Copies saved output redirect file.
ftp	Uses File Transfer Protocol (FTP).
scp	Uses Secure Copy Protocol (SCP).
sftp	Uses Secure File Transfer Protocol (SFTP).
tftp	Uses Trivial File Transfer Protocol (TFTP).
usb1 *file name*	Copies to the specified file on the USB device.
server URL	The URL address of the server.
timeout *timeout interval*	Specifies the maximum time (in seconds) to wait for the server to reply to the connection request. If the timeout period expires, the connecting process stops. The *timeout interval* is from 1 to 150 seconds.

Parameter	Function
`vrf default`	Copies using the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.7	Added the **config-10-6** option.

Example

The following command copies all binary files using SFTP:

```
Switch# copy file all sftp sftp://10.112.71.18/binFiles vrf management
```

copy ftp

Copies a file from a remote server using File Transfer Protocol (FTP).

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

```
copy ftp <server URL> {alias-config|file
{bgpd|hostpd|imi|imish|
nsm|ospfd}|running-config|startup-config|system-image {all|
boot|onie|os}|usb1 <file name>} [vrf {default|management}]
```

```
copy ftp {alias-config|file
{bgpd|hostpd|imi|imish|nsm|ospfd}|
running-config|startup-config}
```

where:

Parameter	Function
server URL	The URL address of the server.
alias-config	Copies to the command alias configuration file.
file bgpd	Copies Border Gateway Protocol (BGP) daemon files.
file hostpd	Copies Host Protocol daemon files.
file imi	Copies Integrated Management Interface (IMI) files.
file imish	Copies Integrated Management Interface Shell (IMISH) files.
file nsm	Copies Network Service Module (NSM) files.
file ospfd	Copies Open Shortest Path First (OSPF) daemon files.
running-config	Copies to the running configuration.
startup-config	Copies to the startup configuration.
system-image	Copies to the system image.
all	Copies both boot and OS images.
boot	Copies only the boot image.
onie	Copies only the Open Network Install Environment (ONIE) image. **Note:** Not available on the G8332.
os	Copies only the OS image.
usb1 *file name*	Copies to the specified file on the USB device.

Parameter	Function
`vrf default`	Copies using the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added `running-config` option.

Example

The following command copies a file from a remote server to the startup configuration using FTP:

```
Switch# copy ftp ftp://admin@10.112.71.18/startConfig.cfg startup-config
vrf default
```

copy http

Copies a file from a remote server using Hypertext Transfer Protocol (HTTP).

Syntax

copy http *<HTTP URL>* **{startup-config|system-image {all|
boot|os}} [vrf {default|management}]**

where:

Parameter	Function
HTTP URL	The URL address of the server.
startup-config	Copies to the startup configuration.
system-image	Copies to the system image.
all	Copies both boot and OS images.
boot	Copies only the boot image.
os	Copies only the OS image.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.7	The command was introduced.

Example

The following command copies a file from a remote server to the system image using HTTP:

```
Switch# copy http http://10.241.36.3/NE1072T-CNOS-10.7.0.102.img
system-image all vrf management
```

copy obs

Copies an On-Box Script (OBS) file to a remote server.

Syntax

copy obs *<script name>* **{sftp|tftp}** *<server URL>* **[vrf {default| management}]**

where:

Parameter	Function
script name	The name of the OBS script file.
sftp	Uses Secure File Transfer Protocol (SFTP).
tftp	Uses Trivial File Transfer Protocol (TFTP).
server URL	The URL address of the server.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command copies an OBS script file to a remove server using SFTP:

```
Switch# copy obs myScript sftp
sftp://root@example.com:22/scripts/myScript
```

copy running-config

Copies the running configuration file to a remote server.

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

```
copy running-config {{ftp|sftp|tftp} [<server URL>] [vrf
{default|management}]|usb1 <file name>|startup-config}
```

```
copy running-config scp [<server URL> [timeout <timeout interval>]
[vrf {default|management}]]
```

where:

Parameter	Function
ftp	Uses File Transfer Protocol (FTP).
sftp	Uses Secure File Transfer Protocol (SFTP).
tftp	Uses Trivial File Transfer Protocol (TFTP).
server URL	The URL address of the server.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.
usb1 *file name*	Copies the running configuration file to the specified file on the USB device.
startup-config	Copies the running configuration file to the startup configuration file.
scp	Uses Secure Copy Protocol (SCP).
timeout *timeout interval*	Specifies the maximum time (in seconds) to wait for the server to reply to the connection request. If the timeout period expires, the connecting process stops. The *timeout interval* is from 1 to 150 seconds.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command copies the running configuration to the startup configuration file:

```
Switch# copy running-config startup-config
```

copy scp

Copies a file from a remote server using Secure Copy Protocol (SCP).

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

```
copy scp <server URL> [timeout <timeout interval>] {alias-config|
file {bgpd|hostpd|imi|imish|nsm|ospfd}|running-config|
startup-config|system-image [all|boot|onie|os]|usb1 <file name>}
[vrf {default|management}]
```

```
copy scp {alias-config|file
{bgpd|hostpd|imi|imish|nsm|ospfd}|
running-config|startup-config}
```

where:

Parameter	Function
server URL	The URL address of the server.
timeout *timeout interval*	Specifies the maximum time (in seconds) to wait for the server to reply to the connection request. If the timeout period expires, the connecting process stops. The *timeout interval* is from 1 to 150 seconds.
alias-config	Copies the command alias configuration file.
file bgpd	Copies Border Gateway Protocol (BGP) daemon files.
file hostpd	Copies Host Protocol daemon files.
file imi	Copies Integrated Management Interface (IMI) files.
file imish	Copies Integrated Management Interface Shell (IMISH) files.
file nsm	Copies Network Service Module (NSM) files.
file ospfd	Copies Open Shortest Path First (OSPF) daemon files.
running-config	Copies to the running configuration.
startup-config	Copies to the startup configuration.
system-image	Copies to the system image.
all	Copies both boot and OS images.
boot	Copies only the boot image.
onie	Copies only the Open Network Install Environment (ONIE) image. **Note:** Not available on the G8332.
os	Copies only the OS image.

Parameter	Function
usb1 *file name*	Copies to the specified file on the USB device.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added **running-config** option.

Example

The following command copies a file from a remote server to the boot configuration using SCP:

```
Switch# copy scp scp://admin@10.112.71.18/startConfig.cfg startup-config
vrf default
```

copy script-log

Copies an On-Box Script (OBS) log file to a remote server.

Syntax

copy script-log *<script log name>* **{sftp|tftp}** *<server URL>* **[vrf {default|management}]**

where:

Parameter	Function
script log name	The name of the OBS script log file.
sftp	Uses Secure File Transfer Protocol (SFTP).
tftp	Uses Trivial File Transfer Protocol (TFTP).
server URL	The URL address of the server.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command copies an OBS script log file to a remove server using SFTP:

```
Switch# copy script-log myOBSLog sftp
sftp://root@example.com/logs/myOBSLog
```

copy sftp

Copies a file from a remote server using Secure File Transfer Protocol (SFTP).

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

```
copy sftp <server URL> {alias-config|file
{bgpd|hostpd|imi|imish|
nsm|ospfd}|obs <script name>|running-config|startup-config|
system-image [all|boot|onie|os]|usb1 <file name>} [vrf {default|
management}]
```

```
copy sftp {alias-config|file
{bgpd|hostpd|imi|imish|nsm|ospfd}|
running-config|startup-config}
```

where:

Parameter	Function
server URL	The URL address of the server.
alias-config	Copies the command alias configuration file.
file bgpd	Copies Border Gateway Protocol (BGP) daemon files.
file hostpd	Copies Host Protocol daemon files.
file imi	Copies Integrated Management Interface (IMI) files.
file imish	Copies Integrated Management Interface Shell (IMISH) files.
file nsm	Copies Network Service Module (NSM) files.
file ospfd	Copies Open Shortest Path First (OSPF) daemon files.
obs *script name*	Copies to the specified OBS script file.
running-config	Copies to the running configuration.
startup-config	Copies to the startup configuration.
system-image	Copies to the system image.
all	Copies both boot and OS images.
boot	Copies only the boot image.
onie	Copies only the Open Network Install Environment (ONIE) image. **Note:** Not available on the G8332.
os	Copies only the OS image.
usb1 *file name*	Copies to the specified file on the USB device.

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Parameter	Function
`vrf default`	Copies using the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added `running-config` option.

Example

The following command copies a file from a remote server to the startup configuration using SFTP:

```
Switch# copy sftp sftp://admin@10.112.71.18/startConfig.cfg
startup-config vrf management
```

copy startup-config

Copies the startup configuration file to a remote server.

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

**copy startup-config {{ftp|running-config|scp|sftp|tftp}
[<*server URL*>] [timeout <*timeout value*>] [vrf {default|management}]|
usb1 <*file name*>}**

where:

Parameter	Function
ftp	Uses File Transfer Protocol (FTP).
running-config	Copies to the running configuration.
scp	Uses Secure Copy Protocol (SCP).
sftp	Uses Secure File Transfer Protocol (SFTP).
tftp	Uses Trivial File Transfer Protocol (TFTP).
server URL	The URL address of the server.
timeout *timeout value*	Specifies the maximum time (in seconds) to wait for the server to reply to the connection request. If the timeout period expires, the connecting process stops. The *timeout value* is from 1 to 150 seconds. **Note:** This parameter is available only using SCP.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.
usb1 *file name*	Copies the startup configuration file to the specified file on the USB device.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added **running-config** option.

Example

The following command copies the startup configuration to the file
`startup-config-copy.cfg` on the USB device:

```
Switch# copy startup-config usb1 startup-config-copy.cfg
```

copy tech-support

Copies the technical support information dump file to a remote server.

Syntax

`copy tech-support {ftp|scp|sftp|tftp}` *<server URL>* **`[timeout`** *<timeout interval>*`] [vrf {default|management}]`

where:

Parameter	Function
`ftp`	Uses File Transfer Protocol (FTP).
`scp`	Uses Secure Copy Protocol (SCP).
`sftp`	Uses Secure File Transfer Protocol (SFTP).
`tftp`	Uses Trivial File Transfer Protocol (TFTP).
server URL	The URL address of the server.
`timeout` *timeout interval*	Specifies the maximum time (in seconds) to wait for the server to reply to the connection request. If the timeout period expires, the connecting process stops. The *timeout interval* is from 1 to 150 seconds. **Note:** This parameter is available only using SCP.
`vrf default`	Copies using the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command copies the technical support dump file to a remote server using SFTP:

```
Switch# copy tech-support sftp
sftp://root@example.com:2222/dumpFiles/techSupport-EX67T
```

copy tftp

Copies a file from a remote server using Trivial File Transfer Protocol (TFTP).

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

```
copy tftp <server URL> {alias-config|file {bgpd|hostpd|imi|
imish|nsm|ospfd}|lsm-cert|obs <script name>|running-config|
startup-config|system-image [all|boot|onie|os]|usb1 <file name>}
[vrf {default|management}]
```

```
copy tftp {file
{alias-config|bgpd|hostpd|imi|imish|nsm|ospfd}|
running-config|startup-config}
```

where:

Parameter	Function
server URL	The URL address of the server.
alias-config	Copies the command alias configuration file.
file bgpd	Copies Border Gateway Protocol (BGP) daemon files.
file hostpd	Copies Host Protocol daemon files.
file imi	Copies Integrated Management Interface (IMI) files.
file imish	Copies Integrated Management Interface Shell (IMISH) files.
file nsm	Copies Network Service Module (NSM) files.
file ospfd	Copies Open Shortest Path First (OSPF) daemon files.
lsm-cert	Copies Low Security Mode (LSM) certificate.
obs *script name*	Copies to the specified OBS script file.
running-config	Copies to the running configuration.
startup-config	Copies to the startup configuration.
system-image	Copies to the system image.
all	Copies both boot and OS images.
boot	Copies only the boot image.
onie	Copies only the Open Network Install Environment (ONIE) image. **Note:** Not available on the G8332.
os	Copies only the OS image.

Parameter	Function
usb1 *file name*	Copies to the specified file on the USB device.
vrf default	Copies using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added the **running-config** option.

Example

The following command a file from a remote server to the startup configuration using TFTP:

```
Switch# copy tftp tftp://10.112.71.18/startConfig.cfg startup-config vrf
default
```

copy usb1

Copies a file from the USB device to the system image.

Note: You can perform read-only operations for USB flash drives formatted as NTFS.

Syntax

copy usb1 *<file name>*
{running-config|startup-config|system-image
{all|boot|onie|os}}

where:

Parameter	Function
file name	The path and name of file to be copied.
running-config	Copies to the running configuration.
startup-config	Copies only to the startup image.
system-image	Copies to the system image.
all	Copies both to boot and OS images.
boot	Copies only to the boot image.
onie	Copies only to the Open Network Install Environment (ONIE) image. **Note:** Not available on the G8332.
os	Copies only to the OS image.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added **running-config** option.

Example

The following command copies an OS image from the USB device to the system image:

```
Switch# copy usb1 /os-images/CNOS-10.7.2.0.imgs system-image os
```

dir usb1

Displays a list of the USB device files or a specific file content.

Syntax

dir usb1 [<*file name*>**]**

where:

Parameter	Function
file name	The name of the USB file to be displayed.

Modes

Privileged EXEC Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays a list of all USB content:

```
Switch# dir usb1
```

edit script

Edits the specified On-Box Script (OBS) file.

Syntax

edit script *<script name>*

where:

Parameter	Function
script name	The name of the OBS script file.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command edits the OBS script obs-script-10:

```
Switch# edit script obs-script-10
```

maint mode enable

Enables or disables maintenance mode.

To configure a password to activate this option, in Global Configuration Mode, use the command:

```
Switch(config)# maint password
```

Syntax

maint mode enable

To disable maintenance mode, use the following command:

no maint mode

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.5	Updated documentation for the command

Example

The following command enables maintenance mode:

```
Switch# maint mode enable
```

Related Commands

Command	Description
maint password	Sets a maintenance mode password

ping

Polls the Internet Gateway or "pings" to see if the specified host is reachable.

Syntax

ping [<*destination address*>**|**<*hostname*>**] [vrf {default|management}]**
[source <*source address*>**] [interface {**<*interface name*>**|ethernet**
<*chassis number***/***port number*>**|loopback** <*loopback interface*>**|mgmt 0|**
port-channel <*LAG number*>**|vlan** <*VLAN ID*>**}] [count {**<*number*>**|**
unlimited}] [df-bit] [interval <*seconds*>**] [packet-size** <*bytes*>**]**
[timeout <*seconds*>**]**

where:

Parameter	Description
destination address	The IP address of the host you are trying to ping.
hostname	The name of the host you are trying to ping.
vrf default	Pings the default VRF instance for the specified remote host.
vrf management	Pings the management VRF instance for the specified remote host.
source	Specifies the source IPv4 address to use.
source address	The IP address of the source host.
interface *interface name*	The name of the interface to ping.
interface ethernet *chassis number***/***port number*	Pings the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface loopback *loopback interface*	Pings the specified loopback interface. The *loopback interface* is an integer from 0 to 7.
interface mgmt 0	Pings the management interface.
interface port-channel *LAG number*	Pings the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
interface vlan *VLAN ID*	Pings the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.
count <*number*>**| unlimited**	Specifies repeat counts of ping packets. You can either set an unlimited number of counts or specify a specific value from 1 to 655350. The default value is 5 ping packets.
df-bit	Enables the do-not-fragment bit in the IPv4 header. The default value is disabled.

interval *seconds*	Sets the interval of sending ping packets, in seconds (from 0 to 60). Default value is 0 seconds.
packet-size *bytes*	Sets the packet size of sending ping packets, in bytes (from 1 to 65468). The default value is 56 bytes.
timeout *seconds*	Specifies non-responsive timeout interval of sending ping packets, in seconds (from 1 to 60). The default value is 2 seconds.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Example

The following command pings host 10.148.22.18:

```
Switch# ping 10.148.22.18
```

ping6

Polls the Internet Gateway or "pings" an IPv6 address to see if the specified host is reachable.

Syntax

ping6 [<*destination address*>**|**<*hostname*>**] [vrf {default|management}]**
[source <*source address*>**] [interface {**<*interface name*>**|ethernet**
<*chassis number*/*port number*>**|loopback** <*loopback interface*>**|mgmt 0|**
port-channel <*LAG number*>**|vlan** <*VLAN ID*>**}] [count {**<*number*>**|**
unlimited}] [interval <*seconds*>**] [packet-size** <*bytes*>**] [timeout**
<*seconds*>**]**

where:

Parameter	Description
destination address	The IPv6 address of the host you are trying to ping.
hostname	The name of the host you are trying to ping.
vrf default	Pings the default VRF instance for the specified remote host.
vrf management	Pings the management VRF instance for the specified remote host.
source	Specifies the source IPv6 address to use.
source adress	The IPv6 address of the source host.
interface *interface name*	The name of the interface to ping.
interface ethernet *chassis number/port number*	Pings the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface loopback *loopback interface*	Pings the specified loopback interface. The *loopback interface* is an integer from 0 to 7.
interface mgmt 0	Pings the management interface.
interface port-channel *LAG number*	Pings the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
interface vlan *VLAN ID*	Pings the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.
count <*number*>**| unlimited**	Specifies repeat counts of ping packets. You can either set an unlimited number of counts or specify a specific value from 1 to 655350. The default value is 5 ping packets.

interval *seconds*	Sets the interval of sending ping packets, in seconds (from 0 to 60). Default value is 0 seconds.
packet-size *bytes*	Sets the packet size of sending ping packets, in bytes (from 1 to 65468). The default value is 56 bytes.
timeout *seconds*	Specifies non-responsive timeout interval of sending ping packets, in seconds (from 1 to 60). The default value is 2 seconds.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Example

The following command pings host `2001:db8:85a3::8a2e:370:7334`:

```
Switch# ping6 2001:db8:85a3::8a2e:370:7334
```

python

Enters the Python Programming Shell. To exit the Python Shell either type **quit()**, **exit()**, or press **<Ctrl + D>**.

Syntax

python [<*script name*> **[**<*list of arguments*>**]]**

where:

Paramete	Function
script name	The name of the Python script file.
list of arguments	The list of arguments for the specified script file.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters the Python Shell:

```
Switch# python

>>> help()
Welcome to Python 2.7! This is the online help utility.

If this is your first time using Python, you should definitely check out
the tutorial on the Internet at http://docs.python.org/tutorial/.

Enter the name of any module, keyword, or topic to get help on writing
Python programs and using Python modules. To quit this help utility and
return to the interpreter, just type "quit".

To get a list of available modules, keywords, or topics, type "modules",
"keywords", or "topics". Each module also comes with a oneline summary of
what it does; to list the modules whose summaries contain a given word
such as "spam", type "modules spam".

help> quit
>>> quit()

Switch#
```

reload

Restarts the switch. You will be prompted to confirm this action.

If the running configuration is different from the startup configuration, the switch will a message informing you of this. If you restart the switch without saving the running configuration, all unsaved changes will be lost.

To save the running configuration, use one of the following commands:

- **copy running-config startup-config**
- **write**

Syntax

reload [schedule {monday|tuesday|wednesday|thursday|friday|saturday|sunday} {HH:MM} [reason *<string>***|]]**

reload schedule abort

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **schedule** option.

Example

The following command restarts the switch:

```
Switch# reload
```

clear debug buffer

Clears the content of the debug tracing buffer for a given facility.

Syntax

`clear debug-buffer {all |` *`<facility name>`***`}`**

where:

Parameter	Function
all	Clears all the debug trace buffers related to all facilities.
facility name	Clears debug trace buffer contents for a specified facility.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command deletes all debug trace buffer contents for all facilities:

```
Switch# clear debug-buffer all
```

clear debug logfile

Clears the content of the debug trace log file.

Syntax

clear debug logfile

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command deletes the content of the debug trace log file:

```
Switch# clear debug logfile
```

clear ip arp

Deletes all Address Resolution Protocol (ARP) table entries.

Syntax

clear ip arp [*<IPv4 address>***|***<interface name>***|ethernet** *<chassis number/* *port number>***|loopback** *<loopback interface number>***|mgmt 0|vlan** *<VLAN ID>***]** **[force-delete] [vrf {all|default|management}]**

where:

Parameter	Function
IPv4 address	Deletes ARP entries for the specified IPv4 address.
interface name	Deletes ARP entries for the interface specified by name.
ethernet *chassis number/port number*	Deletes ARP entries for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Deletes ARP entries for the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
mgmt 0	Deletes ARP entries for the management interface.
vlan *VLAN ID*	Deletes ARP entries for the specified VLAN interface. The *VLAN ID* is an integer from 1 to 4094.
force-delete	Deletes ARP entries without refreshing the table.
vrf all	Deletes ARP entries associated with all Virtual Routing and Forwarding (VRF) instances.
vrf default	Deletes ARP entries associated with the default VRF instance.
vrf management	Deletes ARP entries associated with the management VRF instance.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all ARP table entries:

```
Switch# clear ip arp
```

clear ip bgp

Deletes Border Gateway Protocol (BGP) neighbors.

Syntax

clear ip bgp {all|{ipv4|ipv6} unicast} {*|<*AS number*>**|**<*neighbor address*>**[/**<*prefix length*>**]} [vrf {all|default}]**

clear ip bgp {<*AS number*>**|**<*neighbor address*>**|external|peer-group** <*peer group name*>**} [in [prefix-filter]|out|soft [in|out]]**

clear ip bgp {*|<*neighbor address*>**} [vrf default] [soft [in|out]]**

clear ip bgp {*|<*AS number*>**|**<*neighbor address*>**|external|peer-group** <*peer group name*>**} [ipv4 unicast {in [prefix-filter]|out|soft** **[in|out]}]**

clear ip bgp {*|<*AS number*>**} [ipv6 unicast [soft [in|out]]]**

where:

Parameter	Function
all	Deletes BGP neighbors for all IP address families.
ipv4	Deletes BGP neighbors only for the IPv4 address family.
ipv6	Deletes BGP neighbors only for the IPv6 address family.
unicast	Resets BGP neighbors only for the unicast IP address family.
*	Deletes all BGP neighbors.
AS number	Deletes BGP neighbors from the specified autonomous system (AS). The *AS number* is an integer from 1 to 4294967295.
neighbor address	The IPv4 or IPv6 address of the BGP neighbor.
prefix length	The IPv4 or IPv6 network mask.
external	Deletes all BGP neighbors outside the local AS.
peer-group *peer group name*	Deletes all BGP neighbors that are part of the specified peer group.
soft	Triggers a soft reconfiguration (a routing update without resetting the BGP session).
in	Triggers a soft reconfiguration and saves a copy of all received routes.

Parameter	Function
prefix-length	Pushes out the prefix list Outbound Route Filter (ORF) and then, triggers a soft reconfiguration and saves a copy of all received routes.
out	Triggers a soft reconfiguration and saves a copy of all sent routes.
vrf all	Deletes BGP neighbors associated with all Virtual Routing and Forwarding (VRF) instances.
vrf default	Deletes BGP neighbors associated with the default VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all BGP neighbors:

```
Switch# clear ip bgp *
```

clear ip bgp dampening

Resets Border Gateway Protocol (BGP) dampening information.

Syntax

clear ip bgp [all|{ipv4|ipv6} unicast] dampening [<*neighbor address*>**[/**<*prefix length*>**]] [vrf {all|default}]**

where:

Parameter	Function
all	Resets dampening information for all IP address families.
ipv4	Resets dampening information only for the IPv4 address family.
ipv6	Resets dampening information only for the IPv6 address family.
unicast	Resets dampening information only for the unicast IP address family.
neighbor address	The IPv4 or IPv6 address of the BGP neighbor.
prefix length	The IPv4 or IPv6 network mask.
vrf all	Resets dampening information for BGP neighbors associated with all Virtual Routing and Forwarding (VRF) instances.
vrf default	Resets dampening information for BGP neighbors associated with the default VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets BGP dampening information for all IP address families:

```
Switch# clear ip bgp all dampening
```

clear ip bgp flap-statistics

Resets Border Gateway Protocol (BGP) flap statistics.

Syntax

`clear ip bgp [all|{ipv4|ipv6} unicast] flap-statistics [`*`<neighbor address>`***`[/`***`<prefix length>`***`]] [vrf {all|default}]`**

where:

Parameter	Function
`all`	Resets flap statistics for all IP address families.
`ipv4`	Resets flap statistics only for the IPv4 address family.
`ipv6`	Resets flap statistics only for the IPv6 address family.
`unicast`	Resets flap statistics only for the unicast IP address family.
neighbor address	The IPv4 or IPv6 address of the BGP neighbor.
prefix length	The IPv4 or IPv6 network mask.
`vrf all`	Resets flap statistics for BGP neighbors associated with all Virtual Routing and Forwarding (VRF) instances.
`vrf default`	Resets flap statistics for BGP neighbors associated with the default VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets BGP flap statistics for all IP address families:

```
Switch# clear ip bgp all flap-statistics
```

clear ip ospf process

Resets the Open Shortest Path First (OSPF) process.

Syntax

```
clear ip ospf process
```

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets the OSPF process:

```
Switch# clear ip ospf process
```

clear ip prefix-list

Deletes an IPv4 prefix list.

Syntax

clear ip prefix-list [<*prefix list name*> **[**<*IP prefix*>**]]**

where:

Parameter	Function
prefix list name	The name of the prefix list.
IP prefix	Deletes the specified prefix from the selected prefix list. The *IP prefix* format is: *IPv4 address* / *network mask length*

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all IPv4 prefix lists:

```
Switch# clear ip prefix-list
```

clear ip route

Deletes IPv4 routes.

Syntax

```
clear ip route [vrf {all|default|management}] {*|<IP route>}
```

where:

Parameter	Function
vrf all	Deletes IPv4 routes associated with all Virtual Routing and Forwarding (VRF) instances.
vrf default	Deletes IPv4 routes associated with the default VRF instance.
vrf management	Deletes IPv4 routes associated with the management VRF instance.
*	Deletes all IPv4 routes.
IP route	Deletes the specified IPv4 route. The *IP route* format is: *IPv4 address* **/** *network mask length*

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all IPv4 routes:

```
Switch# clear ip route *
```

clear ipv6 bgp

Deletes IPv6 Border Gateway Protocol (BGP) neighbors.

Syntax

clear ipv6 bgp {*|<*neighbor address*>**} [vrf default [soft [in|**
out]]]

where:

Parameter	Function
*	Deletes all IPv6 BGP neighbors.
neighbor address	Deletes only the specified BGP neighbor by its IPv6 address.
vrf default	Deletes IPv6 BGP neighbors associated with the default Virtual Routing and Forwarding (VRF) instance.
soft	Triggers a soft reconfiguration (a routing update without resetting the BGP session).
in	Triggers a soft reconfiguration and saves a copy of all received routes.
out	Triggers a soft reconfiguration and saves a copy of all sent routes.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all IPv6 BGP neighbors:

```
Switch# clear ipv6 bgp *
```

clear ipv6 prefix-list

Deletes an IPv6 prefix list.

Syntax

clear ipv6 prefix-list [*<prefix list name>* **[***<IP prefix>***]]**

where:

Parameter	Function
prefix list name	The name of the prefix list.
IP prefix	Deletes the specified prefix from the selected prefix list. The *IP prefix* format is: *IPv6 address*/*network mask length*

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all IPv6 prefix lists:

```
Switch# clear ipv6 prefix-list
```

clear ipv6 route

Deletes IPv6 routes.

Syntax

clear ipv6 route [vrf {all|default|management}] {*|<IP route>**}**

where:

Parameter	Function
vrf all	Deletes IPv6 routes associated with all Virtual Routing and Forwarding (VRF) instances.
vrf default	Deletes IPv6 routes associated with the default VRF instance.
vrf management	Deletes IPv6 routes associated with the management VRF instance.
*	Deletes all IPv6 routes.
IP route	Deletes the specified IPv6 route. The *IP route* format is: *IPv6 address/network mask length*

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all IPv6 routes:

```
Switch# clear ipv6 route *
```

clear logging ip access-list cache

Deletes the ACL cache.

Syntax

```
clear logging ip access-list cache
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command deletes the ACL cache:

```
Switch# clear logging ip access-list cache
```

clear logging logfile

Deletes the logged messages stored in the log file.

Syntax

clear logging logfile

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes the logged messages from the log file:

```
Switch# clear logging logfile
```

clear nwv vxlan

Deletes VXLAN counters.

Syntax

clear nwv vxlan virtual-network [<*VXLAN VNID*>**] counters**

clear nwv vxlan virtual-port counters interface [ethernet <*chassis number***/***port number*>**|port-channel** <*LAG*>**]**

where:

Parameter	Function
VXLAN VNID	Resets statistics for the specified VXLAN VNID number. The VXLAN VNID is an integer from 1-16777214.
ethernet *chassis number***/***port number*	Resets VXLAN statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG*	Resets VXLAN statistics for the specified Link Aggregation Group (LAG). The LAG number is an integer from 1 to 4096.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command deletes all Virtual Network counters:

```
Switch# clear nwv vxlan virtual-network counters
```

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272

- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

clear sflow statistics

Deletes sFlow statistics.

Syntax

```
clear sflow statistics
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command deletes the sFlow statistics:

```
Switch# clear sflow statistics
```

restart bgp

Restarts Border Gateway Protocol (BGP).

Syntax

restart bgp *<AS number>*

where:

Parameter	Function
AS number	Removes BGP peers associated with the specified autonomous system (AS). The *AS number* is an integer from 1 to 4294967295.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command restarts BGP and removes peers associated with AS 200:

```
Switch# restart bgp 200
```

ssh

Creates a Secure Shell (SSH) connection.

Syntax

ssh {<*username@IP address*>**|**<*username@hostname*>**} [port** <*port number*>**]**
[vrf {default|management}]

where:

Parameter	Function
username	The ID used when establishing the SSH connection. The default user is admin.
IP address	The IP address of the network device at the other end of the SSH connection.
hostname	The hostname of the network device at the other end of the SSH connection.
port *port number*	Creates a SSH connection using the specified port of the remote host. The *port number* is an integer from 1 to 65535. The default port is 22.
vrf default	Creates a SSH connection using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Creates a SSH connection using the management VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Examples

The following commands create an SSH connection:

```
Switch# ssh admin1@10.144.187.17
```

```
Switch# ssh admin1@localSwitch port 2005 vrf management
```

ssh6

Creates a Secure Shell version 6 (SSH6) connection.

Syntax

ssh6 [<*username@IPv6 address*>**|**<*username@hostname*>**] [port** <*port number*>**]**
[vrf {default|management}]

where:

Parameter	Function
username	The ID used when establishing the SSH6 connection. The default user is admin.
IPv6 address	The IPv6 address of the network device at the other end of the SSH6 connection.
hostname	The hostname of the network device at the other end of the SSH6 connection.
port *port number*	Creates a SSH6 connection using the specified port of the remote host. The *port number* is an integer from 1 to 65535. The default port is 22.
vrf default	Creates a SSH6 connection using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Creates a SSH6 connection using the management VRF instance.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Examples

The following commands create an SSH6 connection:

```
Switch# ssh6 admin1@2034:11df::98
```

```
Switch# ssh6 admin1@localSwitch port 2005 vrf management
```

stop running-script

Stops the specified running Python script.

Syntax

stop running-script *<"script name">*

where:

Parameter	Function
script name	The name of the running Python script. Its name must be specified using quotation marks as follows: `"script name"`

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command stops a running Python script:

```
Switch# stop running-script "py-script-arg"
```

telnet

Creates a Telnet connection.

Syntax

telnet [<*IP address*>**|**<*hostname*>**] [port** <*port number*>**] [vrf {default| management}]**

where:

Parameter	Function
IP address	The IPv4 address to which to establish a connection.
hostname	The hostname to which to establish a connection.
port *port number*	Creates a Telnet connection using the specified port of the remote host. The *port number* is an integer from 1 to 65535. The default port is 23.
vrf default	Creates a Telnet connection using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Creates a Telnet connection using the management VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Examples

The following commands create a Telnet connection:

```
Switch# telnet 16.78.194.3
```

```
Switch# telnet localSwitch port 2005 vrf default
```

telnet6

Creates a Telnet version 6 (Telnet6) connection.

Syntax

telnet6 [<*IPv6 address*>**|**<*hostname*>**] [port** <*port number*>**] [vrf {default|management}]**

where:

Parameter	Function
IPv6 address	The IPv6 address from which to establish a connection.
hostname	The hostname to which to establish a connection.
port *port number*	Creates a Telnet6 connection using the specified port of the remote host. The *port number* is an integer from 1 to 65535. The default port is 23.
vrf default	Creates a Telnet6 connection using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Creates a Telnet6 connection using the management VRF instance.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Examples

The following command creates a Telnet6 connection:

```
Switch# telnet6 fe80::21b:21ff:fe22:e865
```

```
Switch# telnet6 localSwitch port 2005 vrf management
```

terminal terminal-type

Sets the terminal type.

Syntax

[no] terminal terminal-type *<name>*

where:

Parameter	Description
name	Terminal type name.

Using **no** before this command without the last argument deletes the terminal type.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the terminal type to vt100:

```
Switch# terminal terminal-type vt100
```

traceroute

Traces the route from the switch to the specified IPv4 remote host.

Syntax

traceroute [{<remote address>**|**<hostname>**} [vrf {default|
management}] [source** <source address>**]]**

where:

Parameter	Description
remote address	The IPv4 address of the host you are trying to reach.
hostname	The name of the host you are trying to reach.
vrf default	Searches the default VRF instance for the specified remote host.
vrf management	Searches the management VRF instance for the specified remote host.
source	Includes the source IPv4 address in the IP header.
source address	The IPv4 address of the source host.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Example

The following command traces the route from the switch to 10.2.3.47:

```
Switch# traceroute 10.200.3.47 vrf default source 10.124.25.90
```

traceroute6

Traces the route from the switch to the specified IPv6 host.

Syntax

traceroute6 {<*remote address*>**|**<*hostname*>**} [vrf {default|**
management}] [source <*source address*>**] [interface {**<*interface name*>**|**
ethernet <*chassis number***/***port number*>**|loopback** <*loopback interface number*>**|**
mgmt 0|port-channel <*LAG number*>**|vlan** <*VLAN ID*>**}]**

where:

Parameter	Description
remote address	The IPv6 address of the host you are trying to reach.
hostname	The name of the host you are trying to reach.
vrf default	Searches the default VRF instance for the specified remote host.
vrf management	Searches the management VRF instance for the specified remote host.
source	Includes the source IPv6 address in the IP header.
source adress	The IPv6 address of the source host.
interface *interface name*	Uses the ethernet interface identified by its name to trace the route to the remote host.
interface ethernet *chassis number***/***port number*	Uses the specified ethernet port to trace the route to the remote host. The *chassis number* is 1 and the *port number* depends on the switch type.
interface loopback *loopback interface number*	Uses the specified loopback interface to trace the route to the remote host. The *loopback interface number* is an integer from 0 to 7.
interface mgmt 0	Uses the management interface to trace the route to the remote host.
interface port-channel *LAG number*	Uses the specified Link Aggregation Group (LAG) to trace the route to the remote host. The *LAG number* is an integer from 1 to 4096.
interface vlan *VLAN ID*	Uses the specified VLAN to trace the route to the remote host. The *VLAN ID* is an integer from 1 to 4094.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Example

The following command traces the route from the switch to a remote IPv6 host:

```
Switch# traceroute6 tracehost source fe80::aa97:dcff:fede:2501 interface
ethernet 1/12
```

write

Copies the running configuration to the boot configuration.

Syntax

write [erase|file|memory|terminal]

where:

Parameter	Function
erase	Deletes the current boot configuration.
file	Copies the running configuration file to the boot configuration file.
memory	Copies the running configuration to the Non-volatile Random-access Memory (NVRAM).
terminal	Displays the running configuration.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command deletes the current boot configuration:

```
Switch# write erase

Warning: This command will erase the startup-configuration.
Do you wish to proceed anyway? (y/n)  [n] n
```

The following command copies the running configuration to the NVRAM:

```
Switch# write memory

Building configuration...
[OK]

Switch#
```

Chapter 2. CNOS Basics

Your Lenovo switch is ready to perform basic switching functions right out of the box. Some of the more advanced features, however, require some administrative configuration before they can be used effectively.

This guide describes the individual Industry-Standard Command Line Interface (ISCLI) commands available for the switch.

The ISCLI provides a direct method for collecting switch information and performing switch configuration. Using a basic terminal, the ISCLI allows you to view information and statistics about the switch, and to perform any necessary configuration.

This chapter explains how to access the ISCLI for the switch.

ISCLI Command Modes

The ISCLI has three major command modes listed in order of increasing privileges, as follows:

- User EXEC Mode (`Switch>`)

  This is the initial mode of access. By default, password checking is disabled for this mode, on console.

- Privileged EXEC mode (`Switch#`)

  This mode is accessed from User EXEC Mode. This mode can be accessed using the following command: **`enable`**

- Configuration Mode (`Switch(config)#`)

  This mode allows you to make changes to the running configuration. If you save the configuration, the settings survive a reload of the switch. Several sub-modes can be accessed from the User EXEC Mode. This mode can be accessed using the following command: **`configure terminal`**

Each mode provides a specific set of commands. Most lower-privilege mode commands are accessible when using a higher-privilege mode.

Note: The word "`Switch`" is a generic term used throughout the *Command Reference Guide* to indicate the hostname of the switch when issuing commands. Depending on the switch type, the CLI prompt will display either `G8272`, `G8296`, `G8332`, `NE1032`, `NE1032T`, `NE1072T`, `NE10032`, or `NE2572` as the default hostname.

Command Line Interface Shortcuts

The following shortcuts allow you to enter commands quickly and easily.

CLI List and Range Inputs

For VLAN and port commands that allow an individual item to be selected from within a numeric range, lists and ranges of items can now be specified. For example, the vlan command permits the following options:

```
Switch(config)# vlan 1,3,3094              (access VLANs 1, 3, and 3094)
Switch(config)# vlan 1-20                  (access VLANs 1 through 20)
Switch(config)# vlan 1-5,90-99,3090-3094   (access multiple ranges)
Switch(config)# vlan 1-5,19,20,3090-3094   (access a mix of lists and ranges)
```

The numbers in a range must be separated by a dash: *<start of range>-<end of range>*

Multiple ranges or items are permitted using a comma: *<range or item 1>,<range or item 2>*

Do not use spaces within list and range specifications.

Ranges can also be used to apply the same command option to multiple items. For example, to access multiple ports with one command:

```
Switch(config)# interface ethernet 1/10-12   (Ports 10 through 12)
Switch(config-if-range)#
```

Command Abbreviation

Most commands can be abbreviated by entering the first characters which distinguish the command from the others in the same mode. For example, consider the following full command:

```
Switch(config)# spanning-tree mst max-age 30
```

It can be abbreviated as follows:

```
Switch(config)# sp ms max-a 30
```

Tab Completion

By entering the first letter of a command at any prompt and pressing **<Tab>**, the ISCLI displays all available commands or options that begin with that letter. Entering additional letters further refines the list of commands or options displayed. If only one command fits the input text when **<Tab>** is pressed, that command is supplied on the command line, waiting to be entered.

If multiple commands share the typed characters, when you press **<Tab>**, the ISCLI completes the common part of the shared syntax.

Line Editing

The following keystroke commands are available for editing command lines:

Command	Behavior
Ctrl + A	Moves the cursor to the beginning of the line.
Ctrl + B	Moves the cursor one character to the left.
Ctrl + D	Deletes the character at the cursor.
Ctrl + E	Moves the cursor to the end of the line.
Ctrl + F	Moves the cursor one character to the right.
Ctrl + K	"Kills" all text to the right of the cursor, putting it into a buffer.
Ctrl + L	Blanks the screen, leaving the current line intact at the top.
Ctrl + N	Move to the next command in the command history.
Ctrl + P	Move to the previous command in the command history.
Ctrl + T	Swaps the character at the cursor with the character to the left of the cursor.
Ctrl + U	Clears all text from the command line.
Ctrl + W	Deletes from the cursor to the start of the "word."
Ctrl + Y	"Yank" the text from the kill buffer.
Esc + B	Moves the cursor backwards one "word."
Esc + C	Capitalizes the first letter of the "word" or the character where the cursor is pointing.
Esc + D	Deletes to the end of the word to the right of the cursor.
Esc + F	Moves the cursor forwards one "word."
Esc + L	Changes the text to lowercase from the cursor to the end of the "word."
Esc + U	Changes the text to uppercase from the cursor to the end of the "word."

User Access Levels

To enable better switch management and user accountability, two levels or *classes* of user access have been implemented on the switch. Levels of access to CLI, Web management functions, and screens increase as needed to perform various switch management tasks. Conceptually, access classes are defined as follows:

- **network-operator**

  Interaction with the switch is completely passive—nothing can be changed on the switch. Users may display information that has no security or privacy implications, such as switch statistics and current operational state information.

- **network-admin**

  Administrators are the only ones that may make permanent changes to the switch configuration—changes that are persistent across a reboot/reset of the switch. Administrators can access switch functions to configure and troubleshoot problems on the switch. Because administrators can also make temporary (operator-level) changes as well, they must be aware of the interactions between temporary and permanent changes.

Access to switch functions is controlled through the use of unique surnames and passwords. Once you are connected to the switch via local Telnet, remote Telnet, or SSH, you are prompted to enter a password. The default user names/password for each access level are listed in the following table.

Note: To maintain security, change default switch passwords after initial configuration and as regularly as required under your network security policies.

User Account	Description and Tasks Performed	Password
Network Operator	The network operator has no direct responsibility for switch management. He or she can view all switch status information and statistics, but cannot make any configuration changes to the switch.	
Network Administrator	The network administrator has complete access to all command modes, information, and configuration commands on the switch, including the ability to change both the operator and administrator passwords.	`admin`

Note: Access to network-operator user level can be disabled by setting the password to an empty value.

Using User EXEC Commands

Some basic commands are recognized throughout the ISCLI command modes. These commands are useful for obtaining online help, navigating through the interface, and for saving configuration changes.

For general help with using the CNOS ISCLI, enter **help**.

show

Displays information about the given parameter.

Syntax

show *<parameter>*

where:

Parameter	Description
parameter	The item about which information is desired.

For full information about the **show** commands, see Chapter 32, "Show Commands".

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command shows the users logged into the switch:

```
Switch> show users
```

Restrictions

Not all **show** commands work in all modes. See Chapter 32, "Show Commands" for more information about which **show** commands work in which modes.

enable

Turns on Privileged EXEC Mode.

Syntax

enable

Modes

User EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables Privileged EXEC Mode:

```
Switch> enable
```

exit

Leave the current command mode and returns to the previous command mode.

Note: If in User EXEC or Privileged EXEC Modes, executing the command will log off the switch.

Syntax

exit

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Examples

The following command exists Configuration Command Mode and returns to the Privileged EXEC Mode:

```
Switch(config)# exit

Switch#
```

The following command exists Privileged EXEC Mode and returns to the login screen:

```
Switch# exit

Switch login:
```

help

Gives a brief description of the interactive help system.

Syntax

help

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a short help text:

```
Switch> help

NOS CLI provides advanced help feature. When you need help, anytime at
the command line please press '?'.

If nothing matches, the help list will be empty and you must backup until
entering a '?' shows the available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a command argument
   (e.g. 'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and
   you want to know what arguments match the input (e.g. 'show ve?'.)
```

logging terminal

Enables or disables the current SSH/Telnet terminal session logging output.

By default, terminal session logging is enabled.

Syntax

`[no] logging terminal`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.
10.4	The command can be also executed from Global Configuration mode.

Example

The following command disables terminal session logging:

```
Switch> no logging terminal
```

Related Commands

Command	Description
show logging info	Displays general logging information.
show monitor	Displays Ethernet Switch Port Analyzer (SPAN) information.

logout

Logs you off the switch.

Syntax

logout

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command logs you off the switch:

```
Switch> logout

Switch login:
```

ntp sync-retry

Retries Network Time Protocol (NTP) synchronization with configured servers.

Syntax

```
ntp sync-retry
```

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command retries NTP synchronization:

```
Switch> ntp sync-retry
```

quit

Logs you off the switch.

Syntax

```
quit
```

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command logs off the switch:

```
Switch# quit

Switch login:
```

clear aaa local user lockout

Unlocks a user that has been locked out during.

Syntax

clear aaa local user lockout username *<username>*

where:

Parameter	Description
username	The name of the user being unlocked.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command clears the lockout for the user user134:

```
Switch> clear aaa local user lockout username user134
```

clear access-list counters

Resets Access Control List (ACL) statistics.

Syntax

clear access-list counters [*<ACL>*]

where:

Parameter	Description
ACL	The name of an ACL for which its statistics will be reset.

Note: If no access list is supplied, all access list statistics are reset.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets the statistics for the access list myList:

```
Switch> clear access-list counters myList
```

clear arp access-list counters

Resets Address Resolution Protocol (ARP) ACL statistics.

Syntax

clear arp access-list counters [*<ARP ACL>***]**

where:

Parameter	Description
ARP ACL	The name of an ARP ACL for which its statistics will be reset.

Note: If no access list is supplied, all ARP access list statistics are reset.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets the statistics for the access list myList:

```
Switch> clear arp access-list counters myList
```

clear bgp ipv4 unicast policy statistics redistribute

Resets Border Gateway Protocol (BGP) IPv4 policy-related information, route filter statistics, and statistics for redistribution.

Syntax

```
clear bgp ipv4 unicast policy statistics redistribute
{all|direct|static} [vrf {all|default}]
```

where:

Parameter	Description
`all`	Resets all BGP statistics for redistributed protocols.
`direct`	Resets BGP statistics for directly-connected switches.
`static`	Resets BGP statistics for static addresses.
`vrf all`	Resets BGP statistics for all Virtual Routing And Forwarding (VRF) instances.
`vrf default`	Resets BGP statistics for the default VRF instance.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets the statistics for the all redistributed protocols:

```
Switch> clear bgp ipv4 unicast policy statistics redistribute all
```

clear bgp ipv6 unicast policy statistics redistribute

Resets Border Gateway Protocol (BGP) IPv6 policy-related information, route filter statistics, and statistics for redistribution.

Syntax

```
clear bgp ipv6 unicast policy statistics redistribute
{all|direct|static} [vrf {all|default}]
```

where:

Parameter	Description
`all`	Resets all BGP statistics for redistributed protocols.
`direct`	Resets BGP statistics for directly-connected switches.
`static`	Resets BGP statistics for static addresses.
`vrf all`	Resets BGP statistics for all Virtual Routing And Forwarding (VRF) instances.
`vrf default`	Resets BGP statistics for the default VRF instance.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command resets the statistics for the all redistributed protocols:

```
Switch> clear bgp ipv6 unicast policy statistics redistribute all
```

clear cee pfc counters

Resets globally or per port Priority Flow Control (PFC) statistics.

Syntax

`clear cee pfc counters [interface ethernet` *<chassis number/ port number>***`]`**

where:

Parameter	Description
`interface ethernet` *chassis number/port number*	Resets PFC statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command resets PFC statistics for ethernet interface 1/12:

```
Switch> clear cee pfc counters interface ethernet 1/12
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

clear cli history

Resets the command line history.

Syntax

`clear cli history`

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets the CLI history:

```
Switch> clear cli history
```

clear copp statistics

Resets Control Plane Policing (CoPP) statistics.

Syntax

```
clear copp statistics
```

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all CoPP statistics:

```
Switch> clear copp statistics
```

clear counters

Resets all statistics.

Syntax

clear counters [interface {all|<interface name>**|ethernet** <chassis number/port number>**|loopback** <loopback interface number>**|mgmt 0|port-channel** <LAG number>**|vlan** <VLAN ID>**}]**

where:

Parameter	Description
interface	Resets statistics for a switch interface.
all	Resets statistics for all switch interfaces.
interface name	Resets statistics for the interface identified by its name.
ethernet *chassis number/port number*	Resets statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface number*	Resets statistics for the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
mgmt 0	Resets statistics for the management interface.
port-channel *LAG number*	Resets statistics for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
vlan *VLAN ID*	Resets statistics for the specified VLAN interface. The *VLAN ID* is an integer from 1 to 4094.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command resets all statistics:

```
Switch> clear counters
```

The following command resets statistics for ethernet port 1/12:

```
Switch> clear counters interface ethernet 1/12
```

clear ip access-list counters

Resets all IP access list statistics.

Syntax

clear ip access-list counters [<*ACL name*>]

where:

Parameter	Description
ACL name	The name of the Access Control List (ACL) for which its statistics will be reset.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all IP counters from access list myACL:

```
Switch> clear ip access-list counters myACL
```

clear ip bgp statistics

Resets all Border Gateway Protocol (BGP) statistics.

Syntax

```
clear ip bgp statistics
```

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all BGP statistics:

```
Switch> clear ip bgp statistics
```

clear ip dhcp snooping counters

Resets all Dynamic Host Configuration Protocol (DHCP) Snooping statistics.

Syntax

`clear ip dhcp snooping counters`

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command resets DHCP Snooping statistics:

```
Switch> clear ip dhcp snooping counters
```

clear ip igmp snooping

Resets Internet Group Management Protocol (IGMP) Snooping statistics and deletes all IGMP Snooping entries.

Syntax

```
clear ip igmp snooping [ecp statistics|{group|mrouter}
{*|<mrouter IPv4 address>|vlan <VLAN ID>}|statistics {all|vlan
<VLAN ID>}]
```

where:

Parameter	Function
`ecp statistics`	Resets IGMP Snooping ECP statistics.
`group`	Deletes IGMP group entries.
`mrouter`	Deletes IGMP multicast router cache entries.
`*`	Deletes all entries.
mrouter IPv4 address	Deletes IGMP entries for the specified multicast IP address.
`vlan` *VLAN ID*	Deletes IGMP entries for the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.
`statistics all`	Resets all IGMP Snooping statistics.
`statistics vlan` *VLAN ID*	Resets IGMP Snooping statistics for the specified VLAN. The *VLAN ID* is from 1 to 4094.

Modes

- User EXEC Mode

- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.3	Added `ecp statistics` option.

Example

The following command resets all IGMP Snooping statistics:

```
Switch> clear ip igmp snooping statistics all
```

clear ip ospf neighbors

Resets Open Shortest Path First (OSPF) neighbor statistics.

Syntax

clear ip ospf [<*OSPF instance*>**] neighbors {*|**<*OSPF neighbor address*>**|** <*interface name*>**|ethernet** <*chassis number/port number*>**|loopback** <*loopback interface number*>**|vlan** <*VLAN ID*>**} vrf {all|default}**

where:

Parameter	Function
OSPF process ID	Resets OSPF neighbor statistics for the specified OSPF instance. The *OSPF instance* is an integer from 0 to 65535.
*	Resets OSPF statistics for all neighbors.
OSPF neighbor address	Resets OSPF statistics for the neighbor identified by its IPv4 address.
interface name	Resets OSPF neighbor statistics for the interface identified by its name.
ethernet *chassis number/port number*	Resets OSPF neighbor statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface number*	Resets OSPF neighbor statistics for the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
vlan *VLAN ID*	Resets OSPF neighbor statistics for the specified VLAN interface. The *VLAN ID* is an integer from 1 to 4094.
vrf all	Resets OSPF neighbor statistics for all Virtual Routing and Forwarding (VRF) instances.
vrf default	Resets OSPF neighbor statistics for the default VRF instance.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all OSPF neighbor statistics:

```
Switch> clear ip ospf neighbors *
```

clear ip ospf policy statistics redistribute

Resets Open Shortest Path First (OSPF) redistribution policy related statistics.

Syntax

```
clear ip ospf policy statistics redistribute {bgp|direct|
static}
```

where:

Parameter	Function
bgp	Resets statistics only for routes learned through the Border Gateway Protocol (BGP).
direct	Resets statistics only for directly connected routes.
static	Resets statistics only for static routes.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets OSPF redistribution policy related statistics only for directly connected routes:

```
Switch> clear ip ospf policy statistics redistribute direct
```

clear ip ospf rib counters

Resets Open Shortest Path First (OSPF) Routing Information Base (RIB) statistics.

Syntax

`clear ip ospf rib counters [vrf {all|default}]`

where:

Parameter	Function
`vrf all`	Resets OSPF RIB statistics for all Virtual Routing and Forwarding (VRF) instances.
`vrf default`	Resets OSPF RIB statistics for the default VRF instance.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all OSPF RIB statistics:

```
Switch> clear ip ospf rib counters
```

clear ip ospf statistics

Resets Open Shortest Path First (OSPF) statistics.

Syntax

clear ip ospf [*<OSPF instance>*] statistics [vrf {all|default}]

where:

Parameter	Function
OSPF instance	Resets OSPF statistics for the specified OSPF instance. The *OSPF instance* is an integer from 0 to 65535.
vrf all	Resets OSPF statistics for all Virtual Routing and Forwarding (VRF) instances.
vrf default	Resets OSPF statistics for the default VRF instance.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all OSPF statistics:

```
Switch> clear ip ospf statistics
```

clear ip ospf traffic

Resets Open Shortest Path First (OSPF) traffic statistics.

Syntax

clear ip ospf [*<OSPF instance>***] traffic [***<interface name>***|ethernet** *<chassis number>***/***port number>***|loopback** *<loopback interface number>***|vlan** *<VLAN ID>***] [vrf {all|default}]**

where:

Parameter	Function
OSPF instance	Resets OSPF traffic statistics for the specified OSPF instance. The *OSPF instance* is from 0 to 65535.
interface name	Resets OSPF traffic statistics for the interface identified by its name.
ethernet *chassis number***/***port number*	Resets OSPF traffic statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface number*	Resets OSPF traffic statistics for the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
vlan *VLAN ID*	Resets traffic statistics for the specified VLAN interface. The *VLAN ID* is an integer from 1 to 4094.
vrf all	Resets OSPF traffic statistics for all Virtual Routing and Forwarding (VRF) instances.
vrf default	Resets OSPF traffic statistics for the default VRF instance.

Modes

● User EXEC Mode

● Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets all OSPF traffic statistics:

```
Switch> clear ip ospf traffic
```

clear ip slp counters

Resets Service Location Protocol (SLP) traffic statistics.

Syntax

```
clear ip slp counters
```

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command resets all SLP traffic statistics:

```
Switch> clear ip slp counters
```

clear ipv6 adjacency

Resets the IPv6 adjacency table.

Syntax

```
clear ipv6 adjacency [<interface name>|<neighbor address>|ethernet
<chassis number/port number>|loopback <loopback interface number>|mgmt 0|
port-channel <LAG number>|vlan <VLAN ID>] [force-clear] [vrf
{all|default|management}]
```

where:

Parameter	Description
interface name	Resets the IPv6 adjacency table for the interface identified by its name.
neighbor address	Resets the IPv6 adjacency table for the neighbor identified by its IPv6 address.
ethernet *chassis number/port number*	Resets the IPv6 adjacency table for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface number*	Resets the IPv6 adjacency table for the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
mgmt 0	Resets the IPv6 adjacency table for the management interface.
port-channel *LAG number*	Resets the IPv6 adjacency table for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
vlan *VLAN ID*	Resets the IPv6 adjacency table for the specified VLAN interface. The *VLAN ID* is an integer from 1 to 4094.
force-clear	Resets the IPv6 adjacency table without a refresh.
vrf all	Resets IPv6 adjacency entries for all Virtual Routing And Forwarding (VRF) instances.
vrf default	Resets IPv6 adjacency entries for the default VRF instance.
vrf management	Resets IPv6 adjacency entries for the management VRF instance.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command resets all IPv6 adjacency table entries for the neighbor with IPv6 address `2001:db8:85a3::8a2e:370:7334`:

```
Switch> clear ipv6 adjacency 2001:db8:85a3::8a2e:370:7334
```

The following command forces a reset of all default VRF IPv6 adjacency table entries for the management interface:

```
Switch> clear ipv6 adjacency mgmt 0 force-clear vrf default
```

clear ipv6 neighbor

Deletes all IPv6 neighbors.

Syntax

```
clear ipv6 neighbor [<interface name>|<neighbor address>|ethernet
<chassis number/port number>|loopback <loopback interface number>|mgmt 0|
port-channel <LAG number>|vlan <VLAN ID>] [force-clear] [vrf
{all|default|management}]
```

where:

Parameter	Function
interface name	Deletes the IPv6 neighbors for the interface identified by its name.
neighbor address	Deletes the IPv6 neighbors for the neighbor identified by its IPv6 address.
ethernet *chassis number/port number*	Deletes the IPv6 neighbors for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface number*	Deletes the IPv6 neighbors for the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
mgmt 0	Deletes the IPv6 neighbors for the management interface.
port-channel *LAG number*	Deletes the IPv6 neighbors for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
vlan *VLAN ID*	Deletes the IPv6 neighbors for the specified VLAN interface. The *VLAN ID* is an integer from 1 to 4094.
force-clear	Deletes the IPv6 neighbors without a refresh.
vrf all	Deletes the IPv6 neighbors for all Virtual Routing And Forwarding (VRF) instances.
vrf default	Deletes the IPv6 neighbors for the default VRF instance.
vrf management	Deletes the IPv6 neighbors for the management VRF instance.

Modes

- User EXEC Mode

- Privileged EXEC Mode

- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes all IPv6 neighbors:

```
Switch> clear ipv6 neighbor
```

clear lacp counters

Resets Link Aggregation Control Protocol (LACP) statistics.

Syntax

`clear lacp counters [interface port-channel` *<LAG number>***`]`**

where:

Parameter	Description
`interface port-channel` *LAG number*	Resets LACP statistics for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.

Modes

- User EXEC Mode

- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets LACP statistics from LAG 85:

```
Switch> clear lacp counters interface port-channel 85
```

clear lacp internal event-history

Deletes the Link Aggregation Control Protocol (LACP) internal event logs.

Syntax

```
clear lacp internal event-history {all|errors|interface|
msgs}
```

where:

Parameter	Description
all	Deletes all LACP event logs.
errors	Deletes only the LACP error logs.
interface	Deletes only the LACP interface logs.
msgs	Deletes only the LACP message logs.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes the LACP interface logs:

```
Switch> clear lacp internal event-history interface
```

clear line

Deletes the session on the specified virtual terminal (VTY).

Syntax

clear line *<VTY name>*

where:

Parameter	Description
VTY name	The name of the VTY session being deleted.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command clears a VTY named myVTY:

```
Switch> clear line myVTY
```

clear lldp counters

Resets Link Layer Discovery Protocol (LLDP) statistics.

Syntax

`clear lldp counters [interface {ethernet` *<chassis number/port number>***`|mgmt 0}]`**

where:

Parameter	Description
`interface`	Resets LLDP statistics for the specified interface.
`ethernet` *chassis number/port number*	Resets LLDP statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
`mgmt 0`	Resets LLDP statistics for the management interface.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets LLDP statistics for ethernet interface 1/12:

```
Switch> clear lldp counters interface ethernet 1/12
```

clear lldp internal event-history

Deletes the Link Layer Discovery Protocol (LLDP) internal event logs.

Syntax

```
clear lldp internal event-history {all|errors|event|msgs|
trace}
```

where:

Parameter	Description
`all`	Deletes all LLDP event logs.
`errors`	Deletes only the LLDP error logs.
`event`	Deletes only the LLDP event logs.
`msgs`	Deletes only the LLDP message logs.
`trace`	Deletes only the LLDP trace logs.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes the LLDP message logs:

```
Switch> clear lldp internal event-history msgs
```

clear lldp neighbors

Deletes Link Layer Discovery Protocol (LLDP) neighbors.

Syntax

`clear lldp neighbors [interface {ethernet` *<chassis number/port number>***`|mgmt O}]`**

where:

Parameter	Description
`interface`	Deletes LLDP neighbors for the specified interface.
`ethernet` *chassis number/port number*	Deletes LLDP neighbors for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
`mgmt O`	Deletes LLDP neighbors for the management interface.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes LLDP neighbors for ethernet interface 1/1:

```
Switch> clear lldp neighbors interface ethernet 1/1
```

clear mac access-list counters

Resets MAC Access Control Lists (ACLs) statistics.

Syntax

clear mac access-list counters [*<MAC ACL>***]**

where:

Parameter	Description
MAC ACL	Resets statistics only for the specified MAC ACL.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets statistics for the MAC ACL named myMACList:

```
Switch> clear mac access-list counters myMACList
```

clear mac address-table

Deletes MAC entries from the Forwarding Database (FDB).

Syntax

```
clear mac address-table {dynamic|static} [address <MAC
address>|{interface ethernet <chassis number/port number>}|
{interface port-channel <LAG number>} [vlan <VLAN ID>] [vlan
<VLAN ID>]
```

where:

Parameter	Description
dynamic	Deletes only dynamic MAC entries. No further arguments deletes all dynamic MAC entries.
static	Deletes only static MAC entries. No further arguments deletes all static MAC entries.
address *MAC address*	Deletes the specified MAC entry. The MAC address can be written as one of the following formats: ● *X.X.X* ● *XX-XX-XX-XX-XX-XX* ● *XX:XX:XX:XX:XX:XX* ● *XXXX.XXXX.XXXX*
interface ethernet *chassis number/port number*	Deletes MAC entries associated with the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type. **Note:** You can also add ethernet *chassis number/port number* combinations using a comma separator, such as **1-1,1-3,1-7**.
interface port-channel *LAG number*	Deletes MAC entries associated with the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096. **Note:** You can also add ethernet *chassis number/port number* combinations using a comma separator, such as **1,4,300,4090**.
vlan *VLAN ID*	(Optional) Deletes MAC entries associated with the specified VLAN. The *VLAN ID* is an integer from 1 to 4093.

Modes

● User EXEC Mode

● Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Updated documentation for this command.

Example

The following command resets all dynamic MAC addresses from the FDB:

```
Switch> clear mac address-table dynamic
```

clear npa internal event-history

Deletes the Network Policy Agent (NPA) internal event logs.

Syntax

```
clear npa internal event-history {all|errors|msgs}
```

where:

Parameter	Description
all	Deletes all NPA event logs.
errors	Deletes only the NPA error logs.
msgs	Deletes only the NPA message logs.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command deletes only the NPA error logs:

```
Switch> clear npa internal event-history errors
```

clear qos statistics

Resets Quality of Service (QoS) statistics.

Syntax

```
clear qos statistics [interface <interface name>|ethernet <chassis
number/port number>|port-channel <LAG number>|vlan <VLAN ID>]
[input|output] [type {qos|queuing}]
```

where:

Parameter	Description
interface	Resets QoS statistics for the specified switch interface.
interface name	Resets QoS statistics for the interface identified by its name.
ethernet *chassis number/port number*	Resets QoS statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Resets QoS statistics for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
vlan *VLAN ID*	Resets QoS statistics for the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.
input	Resets QoS input statistics.
output	Resets QoS output statistics.
type qos	Resets only QoS statistics.
type queuing	Resets only queuing statistics.

Modes

- User EXEC Mode

- Privileged EXEC Mode

- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets QoS statistics:

```
Switch> clear qos statistics input type qos
```

clear rib ipc stats

Resets Routing Information Base (RIB) Inter-Process Communication (IPC) statistics.

Syntax

```
clear rib ipc stats
```

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets RIB IPC statistics:

```
Switch> clear rib ipc stats
```

clear snmp hostconfig

Resets the Simple Network Management Protocol (SNMP) host configuration.

Syntax

```
clear snmp hostconfig
```

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets SNMP host configuration:

```
Switch> clear snmp hostconfig
```

clear spanning-tree counters

Resets Spanning Tree statistics.

Syntax

clear spanning-tree counters [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***|vlan** *<VLAN ID>***]**

where:

Parameter	Description
interface	Resets Spanning Tree statistics for the specified switch interface.
ethernet *chassis number/port number*	Resets Spanning Tree statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Resets Spanning Tree statistics for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
vlan *VLAN ID*	Resets Spanning Tree statistics for the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets spanning tree counters for ethernet port 1/12:

```
Switch> clear spanning-tree counters interface ethernet 1/12
```

clear spanning-tree internal event-history

Deletes the Spanning Tree internal event history.

Syntax

```
clear spanning-tree internal event-history {all|deleted|
errors|msgs|tree}
```

where:

Parameter	Description
all	Deletes all event history.
deleted	Deletes event history of deleted trees and ports.
errors	Deletes STP error event history logs.
msgs	Deletes STP message event history logs.
tree	Deletes STP instance information.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets the STP internal event history of deleted trees and ports:

```
Switch> clear spanning-tree internal event-history deleted
```

clear statistics microburst

Resets the microburst statistics for all ethernet interfaces that have microburst detection enabled.

Syntax

clear statistics microburst [interface ethernet *<chassis number/ port number>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Resets the microburst statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets microburst statistics:

```
Switch> clear statistics microburst
```

clear user

Logs out the specified user.

Syntax

clear user *<username>*

where:

Parameter	Description
username	Logs out the user identified by its username. The *username* can be up to 28 characters in length.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command logs out the user notAdmin10:

```
Switch> clear user notAdmin10
```

clear vlag internal event-history

Resets the Virtual Link Aggregation Group (vLAG) internal event history messages as specified.

Syntax

```
clear vlag internal event-history {all|errors|msgs}
```

where:

Parameter	Description
all	Resets all vLAG events.
errors	Resets all vLAG errors.
msgs	Resets all vLAG messages.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets vLAG message events:

```
Switch> clear vlag internal event-history msgs
```

clear vlag statistics

Resets Virtual Link Aggregation Group (vLAG) statistics.

Syntax

```
clear vlag statistics
```

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets vLAG statistics:

```
Switch> clear vlag statistics
```

clear vlan access-list counters

Resets VLAN access list statistics.

Syntax

clear vlan access-list counters [<*VLAN access map*>**]**

where:

Parameter	Description
VLAN access map	Resets the VLAN statistics for the specified VLAN access map.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command resets access list statistics for the VLAN access map
myVLANMap:

```
Switch> clear vlan access-list counters myVLANMap
```

clear vrrp

Deletes statistics for the specified Virtual Router Redundancy Protocol (VRRP) session.

Syntax

`clear vrrp [ipv6] vr` *<VRRP group ID>* **`interface {`***<interface name>***`|`**
`ethernet` *<chassis number/port number>***`|vlan`** *<VLAN ID>***`}`**

where:

Parameter	Description
ipv6	Specifies that the VRRP session is an IPv6 VRRP session.
vr *VRRP group ID*	Deletes VRRP statistics for the specified VRRP group. The *VRRP group ID* is an integer from 1 to 255.
interface	Deletes VRRP statistics for the specified interface.
interface name	Deletes VRRP statistics for the interface identified by its name.
ethernet *chassis number/port number*	Deletes VRRP statistics for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
vlan *VLAN ID*	Deletes VRRP statistics for the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.

Modes

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration

History

Release	Modification
10.1	The command was introduced.

Example

The following command deletes IPv6 VRRP statistics for ethernet port 1/12:

```
Switch> clear vrrp ipv6 vr 2 interface ethernet 1/12
```

terminal length

Configures the number of lines to show before the screen pauses.

The default value is 24 lines.

Note: Configuring 0 (zero) lines means that there are no screen pauses.

Syntax

terminal [no] length *<number of lines>*

where:

Parameter	Description
number of lines	Configures the number of lines displayed on the screen before a pause. The *number of lines* is an integer from 0 to 511.

The command **terminal no length** resets the terminal length to its default value.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the screen length to 70:

```
Switch> terminal length 70
```

terminal width

Configures the number of columns to show before the screen wraps.

Syntax

terminal [no] width *<number of columns>*

where:

Parameter	Description
number of columns	Configures the number of columns before the screen wraps. The *number of columns* is an integer from 24 to 511.

The command **terminal no width** resets the terminal width to its default value.

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the screen width to 160:

```
Switch> terminal width 160
```

terminal session-timeout

Configures the time interval before an inactive session will expire.

The default value is 5 minutes.

Syntax

terminal session-timeout *<time interval>*

where:

Parameter	Description
time interval	Configures the session timeout interval. The *time interval* consists of two parts: *minutes* (an integer from 1 to 35791) and *seconds* (an integer from 1 to 2147483).

Modes

- User EXEC Mode
- Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the terminal session timeout to 10 minutes and 30 seconds:

```
Switch> terminal session-timeout 10 30
```

where

Displays the Command Mode you are currently in.

Syntax

```
where
```

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command shows which ISCLI mode you are in:

```
Switch(config)# where

mode:       conf
username:   admin
```

Chapter 3. Debugging Commands

The commands in this chapter enable and disable debugging of the switch.

debug aaa

Enables or disables Authentication, Authorization, and Accounting (AAA) debugging.

By default, AAA debugging is disabled.

Syntax

[no] debug aaa

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command debugs AAA on the switch:

```
Switch> debug aaa
```

debug alias

Enables or disables command alias debugging.

By default, command alias debugging is disabled.

Syntax

`[no] debug alias`

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables command alias debugging:

```
Switch> debug alias
```

debug bfd

Enables or disables Bidirectional Forwarding Detection (BFD) debugging.

By default, BFD debugging is disabled.

Syntax

`[no] debug bfd [all|event|ipc-error|ipc-event|nsm|packet|`
`session]`

where:

Parameter	Description
all	Enables all debugging.
event	Enables BFD event debugging.
ipc-error	Enables BFD IPC-error debugging.
ipc-event	Enables BFD IPC-event debugging.
nsm	Enables BFD NSM debugging.
packet	Enables BFD packet debugging.
session	Enables BFD session debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables BFD packet debugging:

```
Switch> debug bfd packet
```

debug bgp

Enables or disables Border Gateway Protocol (BGP) debugging.

By default, BGP debugging is disabled.

Syntax

```
[no] debug bgp [all|bfd|dampening|events|filters|fsm|
keepalives|nht|nsm|packets|updates]
```

where:

Parameter	Description
all	Enables all BGP debugging.
bfd	Enables Bidirectional Forwarding Detection (BFD) BGP debugging.
dampening	Enables BGP dampening debugging.
events	Enables BGP events debugging.
filters	Enables BGP filter debugging.
fsm	Enables BGP Finite State Machine (FSM) debugging.
keepalives	Enables BGP keep-alive message debugging.
nht	Enables NHT message debugging.
nsm	Enables Network Service Module (NSM) message debugging.
packets	Enables BGP packet debugging.
updates	Enables BGP update debugging.

Modes

- User EXEC mode

- Privileged EXEC mode

- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables BGP BFD debugging:

```
Switch> debug bgp bfd
```

debug cee

Enables or disables Converged Enhanced Ethernet (CEE) debugging.

By default, CEE debugging is disabled.

Syntax

`[no] debug cee [all|error]`

where:

Parameter	Description
`all`	Enables all CEE events debugging.
`error`	Enables CEE error debugging.

Using **no** before the command disables CEE debugging on the switch.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables CEE error debugging:

```
Switch(config)# debug cee error
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

debug console

Enables redirecting debug traces associated to all facilities to console.

Syntax

[no] debug console rate-limit {*115200|9600***}**

where:

Parameter	Function
rate-limit {*115200|9600***}**	Console rate limit. The default rate is 9600bps. Debug messages which exceed this rate will be dropped.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables redirecting debug traces to console:

```
Switch# debug console
```

debug diag

Debugs diagnostic or Low Layer Information (LLI) commands.

By default, LLI debugging is disabled.

Syntax

debug diag *<diagnostic command>*

where:

Parameter	Function
diagnostic command	The command to be debugged.

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command debugs the diagnostic command `DiagCommand`:

```
Switch# debug diag DiagCommand
```

debug dns client

Enables or disables Domain Name Service (DNS) client debugging.

By default, DNS client debugging is disabled.

Syntax

[no] debug dns client

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables DNS client debugging:

```
Switch> debug dns client
```

debug hal

Enables or disables Hardware Abstraction Layer (HAL) debugging.

By default, HAL debugging is disabled.

Syntax

`[no] debug hal [all]`

where:

Parameter	Function
`all`	Debugs all HAL commands.

Modes

- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command debugs the HAL:

```
Switch# debug hal all
```

debug hsl

Enables or disables Hardware Specific Layer (HSL) debugging.

By default, HSL debugging is disabled.

Syntax

debug hsl {enable|disable} {0|1|2|3|4|5|6|7|8}

where:

Parameter	Description
enable	Enables debugging.
disable	Disables debugging.
0	All HSL parameters.
1	HSL information.
2	HSL debugging.
3	HSL warnings.
4	HSL errors.
5	HSL fatal events.
6	HSL administration.
7	HSL counters.
8	HSL packets.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables HSL packet debugging:

```
Switch> debug hsl enable 8
```

debug ip arp

Enables or disables Address Resolution Protocol (ARP) debugging.

By default, ARP debugging is disabled.

Note: To show ARP debugging messages, you also need to run the following commands:

```
Switch(config)# logging console 7
Switch(config)# logging level ndd 7
Switch(config)# logging level hsl 6
```

Syntax

[no] debug ip arp {event|packet}

where:

Parameter	Description
event	ARP related events.
packet	ARP packets.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of ARP packets:

```
Switch> debug ip arp packet
```

debug ip bgp packets

Enables or disables the debugging of Border Gateway Protocol (BGP) packet.

By default, BGP packet debugging is disabled.

Syntax

`[no] debug ip bgp packets`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of BGP packets:

```
Switch> debug ip bgp packets
```

debug ip igmp snooping

Enables or disables Internet Group Management Protocol (IGMP) Snooping debugging.

By default, IGMP Snooping debugging is disabled.

Syntax

`[no] debug ip igmp snooping {all|decode|encode|events|fsm| stp|tib}`

where:

Parameter	Description
`all`	Enables the debugging of all IGMP Snooping parameters.
`decode`	Enables IGMP Snooping decoder debugging.
`encode`	Enables IGMP Snooping encoder debugging.
`events`	Enables IGMP Snooping event debugging.
`fsm`	Enables IGMP Snooping Finite State Machine (FSM) debugging.
`stp`	Enables IGMP Snooping Spanning Tree Protocol (STP) debugging.
`tib`	Enables IGMP Snooping Tree-Info-Base (TIB) debugging.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IGMP Snooping decoder debugging:

```
Switch# debug ip igmp snooping decode
```

debug ip ospf

Enables or disables Open Shortest Path First (OSPF) debugging.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf [all]

where:

Parameter	Description
all	Enables the debugging of all OSPF parameters.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of all OSPF parameters:

```
Switch> debug ip ospf all
```

debug ip ospf database-timer rate-limit

Enables or disables the debugging of Open Shortest Path First (OSPF) database timer rate limiting values for link state advertisement (LSA) throttling events.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf database-timer rate-limit

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of all OSPF database timer rate limiting values for LSA throttling events:

```
Switch> debug ip ospf database-timer rate-limit
```

debug ip ospf events

Enables or disables the debugging of all Open Shortest Path First (OSPF) events.

By default, OSPF debugging is disabled.

Syntax

```
[no] debug ip ospf events [abr] [asbr] [lsa] [nssa] [os]
[router] [type3-range] [vlink]
```

where:

Parameter	Description
`abr`	Enables only the debugging of OSPF area border router (ABR) events.
`asbr`	Enables only the debugging of OSPF Autonomous System Boundary Router (ASBR) events.
`lsa`	Enables only the debugging of OSPF link-state advertisement (LSA) events.
`nssa`	Enables only the debugging of OSPF not-so-stubby area (NSSA) events.
`os`	Enables only the debugging of OSPF operating system (OS) interaction events.
`router`	Enables only the debugging of Other router events.
`type3-range`	Enables only the debugging of OSPF type 3 range events.
`vlink`	Enables only the debugging of OSPF virtual link events.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of OSPF ABR and OS events:

```
Switch> debug ip ospf events abr os
```

debug ip ospf ifsm

Enables or disables the debugging of all Open Shortest Path First (OSPF) interface state machine (IFSM) parameters.

By default, OSPF debugging is disabled.

Syntax

`[no] debug ip ospf ifsm [events|status|timers]`

where:

Parameter	Description
`events`	Enables only IFSM event debugging.
`status`	Enables only IFSM status debugging.
`timers`	Enables only IFSM timers debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of only OSPF IFSM events:

```
Switch> debug ip ospf ifsm events
```

debug ip ospf lsa

Enables or disables the debugging of all Open Shortest Path First (OSPF) link state advertisement (LSA) parameters.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf lsa [flooding] [generate] [install] [maxage] [refresh]

where:

Parameter	Description
flooding	Enables only LSA flooding debugging.
generate	Enables only LSA generation debugging.
install	Enables only LSA installation debugging.
maxage	Enables only LSA maximum age processing debugging.
refresh	Enables only LSA refresh debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of OSPF LSA installations:

```
Switch> debug ip ospf lsa flooding install
```

debug ip ospf nfsm

Enables or disables the debugging of all Open Shortest Path First (OSPF) neighbor state machine (NFSM) parameters.

By default, OSPF debugging is disabled.

Syntax

`[no] debug ip ospf nfsm [events|status|timers]`

where:

Parameter	Description
`events`	Enables only NFSM event debugging.
`status`	Enables only NFSM status debugging.
`timers`	Enables only NFSM timers debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of all OSPF NFSM events:

```
Switch> debug ip ospf nfsm events
```

debug ip ospf nsm

Enables or disables the debugging of all Open Shortest Path First (OSPF) Network and Security Manager (NSM) parameters.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf nsm [interface] [redistribute]

where:

Parameter	Description
interface	Enables only NSM interface debugging.
redistribute	Enables only NSM redistribution debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of OSPF NSM interface events:

```
Switch> debug ip ospf nsm interface
```

debug ip ospf packet

Enables or disables the debugging of all Open Shortest Path First (OSPF) packet parameters.

By default, OSPF debugging is disabled.

Syntax

```
[no] debug ip ospf packet [dd] [detail] [hello] [ls-ack]
[ls-request] [ls-update] [recv] [send]
```

where:

Parameter	Description
dd	Enables only OSPF database description debugging.
detail	Offers more detailed debugging information.
hello	Enables only OSPF hello debugging.
ls-ack	Enables only OSPF link state acknowledgment debugging.
ls-request	Enables only OSPF link state request debugging.
ls-update	Enables only OSPF link state update debugging.
recv	Enables only OSPF packets received debugging.
send	Enables only OSPF packets sent debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of all OSPF hello and link state request events:

```
Switch> debug ip ospf packet hello ls-request
```

debug ip ospf policy

Enables or disables Open Shortest Path First (OSPF) policy debugging.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf policy

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF policy debugging:

```
Switch> debug ip ospf policy
```

debug ip ospf redist

Enables or disables Open Shortest Path First (OSPF) redistribution debugging.

By default, OSPF debugging is disabled.

Syntax

`[no] debug ip ospf redist [detail|terse]`

where:

Parameter	Description
`detail`	Enables debugging of OSPF redistribution details.
`terse`	Enables debugging of OSPF redistribution terse.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF redistribution debugging:

```
Switch> debug ip ospf redist
```

debug ip ospf retransmission

Enables or disables Open Shortest Path First (OSPF) retransmission debugging.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf retransmission

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF retransmission debugging:

```
Switch> debug ip ospf retransmission
```

debug ip ospf rib

Enables or disables Open Shortest Path First (OSPF) Routing Information Base (RIB) debugging.

By default, OSPF debugging is disabled.

Syntax

[no] debug ip ospf rib [client] [interface] [redistribute]

where:

Parameter	Description
client	Enables only the debugging of RIB client events.
interface	Enables only the debugging of RIB interface events.
redistribute	Enables only the debugging of RIB redistribute events.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF RIB client and interface debugging:

```
Switch> debug ip ospf rib client interface
```

debug ip ospf route

Enables or disables Open Shortest Path First (OSPF) route debugging.

By default, OSPF debugging is disabled.

Syntax

`[no] debug ip ospf route [ase] [ia] [install] [spf]`

where:

Parameter	Description
`ase`	Enables only OSPF external route calculation debugging.
`ia`	Enables only OSPF inter-area route calculation debugging.
`install`	Enables only OSPF route installation debugging.
`spf`	Enables only OSPF shortest path first (SPF) calculation debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF external route calculation and route installation debugging:

```
Switch> debug ip ospf route ase install
```

debug ip ospf spf-trigger

Enables or disables Open Shortest Path First (OSPF) shortest path first (SPF) trigger debugging.

By default, OSPF debugging is disabled.

Syntax

`[no] debug ip ospf spf-trigger [detail|terse]`

where:

Parameter	Description
`detail`	Enables debugging of OSPF redistribution details.
`terse`	Enables debugging of OSPF redistribution terse.

Modes

● User EXEC mode

● Privileged EXEC mode

● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF SPF trigger debugging:

```
Switch> debug ip ospf spf-trigger
```

debug ip packet

Enables or disables IP packet debugging.

By default, IP packet debugging is disabled.

Syntax

[no] debug ip packet [address {<IP address>**|**<IP address>**/**<prefix length>**}] [dest {**<IP address>**|**<IP address>**/**<prefix length>**}] [detail] [protocol {icmp|ospf|tcp|udp}] [source {**<IP address>**|**<IP address>**/**<prefix length>**}]**

where:

Parameter	Description
address	Enables the debugging of packets for the specified IP address.
IP address	The IP address for which to enable packet debugging.
IP address/prefix length	The IP address and network prefix for which to enable packet debugging.
dest	Enables debugging of packets sent to the specified IP destination address.
source	Enables debugging of packets received the specified IP source address.
detail	Offers more detailed debugging information.
protocol	Enables debugging of packets for the specified networking protocol.
icmp	Enables debugging of packets for the Internet Control Message Protocol (ICMP).
ospf	Enables debugging of packets for the Open Shortest Path First (OSPF) protocol.
tcp	Enables debugging of packets for the Transmission Control Protocol (TCP).
udp	Enables debugging of packets for the User Datagram Protocol (UDP).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IP packet debugging for an IP address:

```
Switch> debug ip packet address 10.248.59.6
```

debug ip routing

Enables or disables the debugging of all IP routing events.

By default, IP route debugging is disabled.

Syntax

[no] debug ip routing [add-route|delete-route|mod-route]

where:

Parameter	Description
`add-route`	Enables debugging only for add-route events.
`delete-route`	Enables debugging only for delete-route events.
`mod-route`	Enables debugging only for modify-route events.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of all IP routing events:

```
Switch> debug ip routing
```

debug ipv6 nd

Enables or disables Internet Control Message Protocol (ICMP) version 6 Neighbor Discovery (ND) debugging.

By default, ICMPv6 ND debugging is disabled.

Syntax

`[no] debug ipv6 nd {event|packet}`

where:

Parameter	Description
`event`	Enables only the debugging of ND related events.
`packet`	Enables only the debugging of ND packets.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables ICMPv6 ND packet debugging:

```
Switch> debug ipv6 nd packet
```

debug ipv6 packet

Enables or disables the debugging of IPv6 packet information.

By default, IPv6 packet debugging is disabled.

Syntax

[no] debug ipv6 packet [address {*<IPv6 address>***|***<IPv6 address>***/***<prefix length>***}] [dest {***<IPv6 address>***|***<IPv6 address>***/***<prefix length>***}] [detail] [protocol {icmp|ospf|tcp|udp}] [source {***<IPv6 address>***|***<IPv6 address>***/***<prefix length>***}]**

where:

Parameter	Description
address	Enables the debugging of packets for the specified IP address.
IPv6 address	The IPv6 address for which to enable packet debugging.
IPv6 address/prefix length	The IPv6 address and network prefix for which to enable packet debugging.
dest	Enables debugging of packets sent to the specified IP destination address.
source	Enables debugging of packets received the specified IP source address.
detail	Offers more detailed debugging information.
protocol	Enables debugging of packets for the specified networking protocol.
icmp	Enables debugging of packets for the Internet Control Message Protocol (ICMP).
ospf	Enables debugging of packets for the Open Shortest Path First (OSPF) protocol.
tcp	Enables debugging of packets for the Transmission Control Protocol (TCP).
udp	Enables debugging of packets for the User Datagram Protocol (UDP).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IPv6 packet debugging for an IPv6 address:

```
Switch> debug ipv6 packet address 2001:0db8:85a3:0000:0000:8a2e:0370:7334
```

debug ipv6 routing

Enables or disables debugging for IPv6 routing events.

By default, IPv6 route debugging is disabled.

Syntax

[no] debug ipv6 routing [add-route|delete-route|mod-route]

where:

Parameter	Description
add-route	Enables debugging only for add-route events.
delete-route	Enables debugging only for delete-route events.
mod-route	Enables debugging only for modify-route events.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging for IPv6 routing events:

```
Switch> debug ipv6 routing
```

debug lacp

Enables or disables Link Aggregation Control Protocol (LACP) debugging.

By default, LACP debugging id disabled.

Syntax

```
[no] debug lacp {all|cli|error|event|individual|interface
{all|
ethernet <chassis number/port number>}|message {both|recv|send}|
min-links|packet {both|rx|tx}|sync|timer|trace}
```

where:

Parameter	Description
all	Enables debugging of all LACP parameters.
cli	Enables debugging of the LACP command-line interface.
error	Enables debugging of LACP error events.
event	Enables debugging of LACP events.
individual	Enables debugging of LACP individual.
interface all	Enables debugging on all interfaces.
interface ethernet *chassis number/port number*	Enables debugging on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
message	Enables debugging of LACP message events.
both	Enables the debugging of both sent and received LACP message events.
recv	Enables the debugging of only received LACP message events.
send	Enables the debugging of only sent LACP message events.
min-links	Enables the debugging of LACP minimum link events.
packet	Enables debugging of LACP packet events.
both	Enables the debugging of both received and transmitted LACP packet events.
rx	Enables the debugging of only received LACP packet events.
tx	Enables the debugging of only received LACP packet events.

Parameter	Description
`sync`	Enables debugging of LACP synchronization events.
`timer`	Enables debugging of LACP timer.
`trace`	Enables debugging of LACP trace events.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added `min-links` option.

Example

The following command enables LACP debugging for all interfaces:

```
Switch> debug lacp interface all
```

debug lldp

Enables or disables Link Layer Discovery Protocol (LLDP) debugging.

By default, LLDP debugging is disabled.

Syntax

[no] debug lldp {all|dcbx|decode|encode|error|event|interface {all|ethernet *<chassis number/port number>*}|message|rx|trace|tx}**

where:

Parameter	Description
all	Enables the debugging of all LLDP parameters.
dcbx	Enables the debugging of Data Center Bridging Capability Exchange protocol (DCBX) events.
decode	Enables LLDP decoder debugging.
encode	Enables LLDP encoder debugging.
error	Enables the debugging of LLDP errors.
event	Enables the debugging of LLDP events.
interface all	Enables LLDP debugging for all interfaces.
interface ethernet *chassis number/port number*	Enables LLDP debugging for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
message	Enables the debugging of LLDP messages.
rx	Enables the debugging of received LLDP packets.
trace	Enables the debugging of LLDP trace events.
tx	Enables the debugging of transmitted LLDP packets.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables LLDP debugging for all interfaces:

```
Switch> debug lldp interface all
```

debug logging syslog-id

Generates a specified logging message by simulating a call to the logging application program interface (API). The logging message must be identified by its syslog ID.

Syntax

debug logging syslog-id *<syslog ID>* **count** *<number of messages>*

where:

Parameter	Function
syslog ID	The syslog ID of the logging message to be generated. The syslog ID has the following structure: *<facility>-<severity level>-<mnemonic>* For example: bgp-3-connect_error
count *number of messages*	Specifies the number of messages to generate. The *number of messages* is an integer from 1 to 1000.

The syslog ID of a logging message can be identified by running the following command:

show logging mnemonics [*<facility>***]**

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command generates five logging messages with the syslog ID bgp-3-connect_error:

```
Switch> debug logging syslog-id bgp-3-connect_error count 5
```

debug logfile

Enables redirecting debug traces associated to all facilities to a log file.

Syntax

[no] debug logfile *<file-size>*

where:

Parameter	Function
file-size	The file size of log file in bytes; an integer from 4096-4194304.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables redirecting debug traces to a file:

```
Switch# debug logfile
```

debug monitor

Enables redirecting debug traces associated to all facilities to the SSH/Telnet monitor.

Syntax

[no] debug monitor

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables redirecting debug traces to a SSH/Telnet monitor:

```
Switch# debug monitor
```

debug npa

Enables or disables Network Policy Agent (NPA) debugging.

By default, NPA debugging is disabled.

Syntax

```
[no] debug npa {all|curl|error|event|stats|vlan|vm|vnet|vnic|
web-hook}
```

where:

Parameter	Function
all	Enables the debugging of all NPA parameters.
curl	Enables NPA libcurl debugging.
error	Enables the debugging of NPA errors.
event	Enables the debugging of NPA events.
stats	Enables NPA virtualized Network Interface Card (vNIC) statistics query debugging.
vlan	Enables NPA VLAN action debugging.
vm	Enables NPA virtual machine (VM) query debugging.
vnet	Enables NPA virtual network (VNET) query debugging.
vnic	Enables NPA virtualized Network Interface Card (vNIC) query debugging.
web-hook	Enables NPA web-hook subscription debugging.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables the debugging of NPA errors:

```
Switch> debug npa error
```

debug nsm

Enables or disables the debugging of all Network Service Module (NSM) parameters.

By default, NSM debugging is disabled.

Syntax

[no] debug nsm [all|bfd|events|ha [all]|hal ipc]

where:

Parameter	Description
all	Enables the debugging of all NSM parameters.
bfd	Enables NSM Bidirectional Forwarding Detection (BFD) debugging.
events	Enables NSM event debugging.
ha	Enables NSM high availability debugging.
hal ipc	Enables NSM Hardware Abstraction Layer (HAL) inter-process communication (IPC) debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of NSM events:

```
Switch> debug nsm events
```

debug nsm hsl

Enables or disables the debugging of Network Service Module (NSM) Hardware Specific Layer (HSL).

By default, NSM debugging is disabled.

Syntax

[no] debug nsm hsl {0|1} [<interface name>**|ethernet** <chassis number/port number>**|loopback** <loopback interface number>**|mgmt 0|port-channel** <LAG number>**|vlan** <VLAN ID>**]**

where:

Parameter	Description
0	Enables the debugging of all NSM HSL events.
1	Enables the debugging of NSM HSL interface statistics.
interface name	Enables NSM HSL debugging on the interface identified by its name.
ethernet *chassis number/port number*	Enables NSM HSL debugging on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface number*	Enables NSM HSL debugging on the specified loopback interface. The *loopback interface number* is an integer from 0 to 7.
mgmt 0	Enables NSM HSL debugging on the management interface.
port-channel *LAG number*	Enables NSM HSL debugging on the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1to 4096.
vlan *VLAN ID*	Enables NSM HSL debugging on the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of NSM HSL interface statistics:

```
Switch> debug nsm hsl 1
```

debug nsm packet

Enables or disables Network Service Module (NSM) packet debugging.

By default, NSM debugging is disabled.

Syntax

`[no] debug nsm packet [recv|send] [detail]`

where:

Parameter	Description
`recv`	Enables only the debugging of NSM received packets.
`send`	Enables only the debugging of NSM sent packets.
`detail`	Offers detailed debugging information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of NSM packets with detailed information displayed:

```
Switch> debug nsm packet detail
```

debug ntp

Enables or disables Network Time Protocol (NTP) debugging.

By default, NTP debugging is disabled.

Syntax

`[no] debug ntp`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables NTP debugging:

```
Switch> debug ntp
```

debug pki

Enables or disables Public Key Infratructure (PKI) debugging.

By default, PKI debugging is disabled.

Syntax

[no] debug pki

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables PKI debugging messages:

```
Switch> debug pki
```

debug radius

Enables or disables the Remote Authentication Dial-In User Service (RADIUS) debugging.

By default, RADIUS debugging is disabled.

Syntax

```
[no] debug radius {aaa-request|aaa-request-
lowlevel|all|config|
config-lowlevel|server-monitor|server-monitor-errors}
```

where:

Parameter	Description
`aaa-request`	Enables RADIUS Authentication, Authorization and Accounting (AAA) request debugging.
`aaa-request-lowlevel`	Enables RADIUS Authentication, Authorization and Accounting (AAA) low level request debugging.
`all`	Enables debugging of all RADIUS events.
`config`	Enables RADIUS configuration debugging.
`config-lowlevel`	Enables RADIUS low level configuration debugging.
`server-monitor`	Enables RADIUS server monitoring debugging.
`server-monitor-errors`	Enables RADIUS server monitoring error debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command RADIUS AAA request debugging:

```
Switch> debug radius aaa-request
```

debug rib

Enables or disables Routing Information Base (RIB) debugging.

By default, RIB debugging is disabled.

Syntax

```
[no] debug rib {all|bfd|events|hal events|nsm|packet [recv|
send] [detail]}
```

where:

Parameter	Definition
all	Enables the debugging of all RIB parameters.
bfd	Enables only RIB Bidirectional Forwarding Detection (BFD) debugging.
events	Enables only the debugging of RIB events.
hal events	Enables only the debugging of RIB Hardware Abstraction Layer (HAL) asynchronous events.
nsm	Enables only RIB Network Service Module (NSM) debugging.
packet	Enables only RIB debugging for both received and sent packets.
recv	Enables only RIB received packets debugging.
send	Enables only RIB sent packets debugging.
detail	Offers detailed debugging information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of RIB received packets:

```
Switch> debug rib packet recv
```

debug slp

Enables or disables Service Location Protocol (SLP) debugging.

By default, SLP debugging is disabled.

Syntax

```
[no] debug slp
[agents|all|attributes|decode|encode|interfaces|
rx|services|tx]
```

where:

Parameter	Description
agents	Enables SLP agent debugging.
all	Enables all SLP events debugging.
attributes	Enables SLP attribute debugging.
decode	Enables SLP decoder debugging.
encode	Enables SLP encoder debugging.
interfaces	Enables SLP interface debugging.
rx	Enables the debugging of received SLP packets.
services	Enables SLP service debugging.
tx	Enables the debugging of transmitted SLP packets.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables SLP debugging:

```
Switch> debug slp
```

debug snmp-server

Enables or disables Simple Network Management Protocol (SNMP) agent debugging.

By default, SNMP agent debugging is disabled.

Syntax

[no] debug snmp-server

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables SNMP agent debugging:

```
Switch> debug snmp-server
```

debug spanning-tree all

Enables or disables debugging of all spanning tree commands.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree all

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree commands:

```
Switch> debug spanning-tree all
```

debug spanning-tree bpdu-rx

Enables or disables the debugging of Spanning Tree Bridge Protocol Data Unit (BPDU) receive packets.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree bpdu-rx [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}] [tree** *<tree ID>***]
[detail]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables the debugging of Spanning Tree BPDU receive packets for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables the debugging of Spanning Tree BPDU receive packets for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables the debugging of Spanning Tree BPDU receive packets for the specified spanning tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).
detail	Offers detailed Spanning Tree packet information. **Note:** The **detail** parameter is not available on the NE2572.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.
10.4	The command was updated to support the NE2572.

Example

The following command enables debugging of spanning tree Bridge Protocol Data Unit (BPDU) receive packets for ethernet interface 1/10 on tree 25:

```
Switch> debug spanning-tree bpdu-rx interface ethernet 1/10 tree 25
```

debug spanning-tree bpdu-tx

Enables or disables debugging of spanning-tree Bridge Protocol Data Unit (BPDU) transmit packets for the specified ethernet interface.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree bpdu-tx [interface ethernet *<chassis number/port number>***|port-channel** *<LAG number>***] [tree** *<tree ID>***] [detail]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables the debugging of Spanning Tree BPDU transmit packets for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables the debugging of Spanning Tree BPDU transmit packets for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables the debugging of Spanning Tree BPDU transmit packets for the specified spanning tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).
detail	Offers detailed Spanning Tree packet information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of spanning tree Bridge Protocol Data Unit (BPDU) receive packets for ethernet interface 1/10 on tree 25:

```
Switch> debug spanning-tree bpdu-tx interface ethernet 1/10 tree 25
```

debug spanning-tree cfg

Enables or disables debugging of spanning tree configuration.

By default, Spanning Tree debugging is disabled.

Syntax

`[no] debug spanning-tree cfg`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of spanning tree configuration:

```
Switch> debug spanning-tree cfg
```

debug spanning-tree error

Enables or disables debugging of all spanning tree errors.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree error

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree errors:

```
Switch> debug spanning-tree error
```

debug spanning-tree event

Enables or disables debugging of all spanning tree events.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree event [interface ethernet *<chassis number/port number>***|port-channel** *<LAG number>***] [tree** *<tree ID>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables the debugging of Spanning Tree events for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables the debugging of Spanning Tree events for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables the debugging of Spanning Tree events for the specified spanning tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree events:

```
Switch> debug spanning-tree event
```

debug spanning-tree protocol

Enables or disables debugging of the Spanning Tree Protocol (STP).

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree protocol [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}] [tree** *<tree ID>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables STP debugging on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables STP debugging on the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables STP debugging for the specified Spanning Tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables debugging of STP protocol:

```
Switch> debug spanning-tree protocol
```

debug spanning-tree timer

Enables or disables debugging of all spanning tree timers.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree timer [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}] [tree** *<tree ID>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables Spanning Tree timer debugging on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables Spanning Tree timer debugging on the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables Spanning Tree timer debugging for the specified Spanning Tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree timers:

```
Switch> debug spanning-tree timer
```

debug spanning-tree topology

Enables or disables debugging of all spanning tree topologies.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree topology [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}] [tree** *<tree ID>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables Spanning Tree topology debugging on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables Spanning Tree topology debugging on the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables Spanning Tree topology debugging for the specified Spanning Tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree topologies:

```
Switch> debug spanning-tree topology
```

debug spanning-tree trace

Enables or disables debugging of all spanning tree traces.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree trace [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}] [tree** *<tree ID>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables Spanning Tree trace debugging on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables Spanning Tree trace debugging on the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables Spanning Tree trace debugging for the specified Spanning Tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree traces:

```
Switch> debug spanning-tree trace
```

debug spanning-tree warning

Enables or disables debugging of all spanning tree warnings.

By default, Spanning Tree debugging is disabled.

Syntax

[no] debug spanning-tree warning [interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}] [tree** *<tree ID>***]**

where:

Parameter	Description
interface ethernet *chassis number/port number*	Enables Spanning Tree warning debugging on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Enables Spanning Tree warning debugging on the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
tree *tree ID*	Enables Spanning Tree warning debugging for the specified Spanning Tree instance. The *tree ID* is an integer from 0 to 4094. A value of 0 specifies Common and Internal Spanning Tree (CIST).

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all spanning tree warnings:

```
Switch> debug spanning-tree warning
```

debug ssh

Enables or disables Secure Shell (SSH) debugging.

By default, SSH debugging is disabled.

Syntax

`[no] debug ssh {client|server}`

where:

Parameter	Description
`client`	Enables SSH client debugging.
`server`	Enables SSH server debugging.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables SSH client debugging:

```
Switch> debug ssh client
```

debug syslog

Enables or disables system logging (syslog) debugging.

By default, syslog debugging is disabled.

Syntax

`[no] debug syslog`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables syslog debugging:

```
Switch> debug syslog
```

debug tacacs+

Enables or disables Terminal Access Controller Access Control System (TACACS+) debugging.

By default, TACACS+ debugging is disabled.

Syntax

`[no] debug tacacs+`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of the Terminal Access Controller Access Control System (TACACS+) feature:

```
Switch> debug tacacs+
```

debug teaming

Enables or disables teaming debugging.

By default, TACACS+ debugging is disabled.

Syntax

[no] debug teaming profile *<profile ID>* **interface {ethernet** *<port-number>* **| port-channel** *<channel-number>***}**

where:

Parameter	Description
profile ID	The teaming profile number; an integer from 1-200.
ethernet *<port number>*	Sets the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *<channel number>*	Sets the specified Link Aggregation Group (LAG). The *channel number* is from 1 to 4096.

Modes

● User EXEC mode

● Privileged EXEC mode

● Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables debugging of teaming feature:

```
Switch> debug teaming profile 5 interface ethernet 1/49/1
```

debug telemetry

Enables or disables telemetry debugging messages.

By default, telemetry debugging messages are disabled.

Syntax

```
[no] debug telemetry {all-bview-messages|all-daemon-messages|
all-messages|bview-bst|bview-bst-json|bview-buffer-pool|
bview-heartbeat|bview-module-mgr|bview-sb-plugin|bview-sb-
redirect|bview-sys-json|bview-sys-utils|daemon-cli|daemon-
db|daemon-msg-queue|daemon-mutex|daemon-nsm-client|daemon-
push|daemon-smi-server|if-i2n|if-n2i}
```

where:

Parameter	Description
`all-bview-messages`	Enables debugging messages for all broadview event types.
`all-daemon-messages`	Enables debugging messages for all telemetry daemon event types.
`all-messages`	Enables debugging messages for all event types.
`bview-bst`	Enables broadview Buffer Statistics Tracking (BST) debugging messages.
`bview-bst-json`	Enables broadview BST json encoding debugging messages.
`bview-buffer-pool`	Enables broadview buffer pool debugging messages.
`bview-heartbeat`	Enables broadview heartbeat debugging messages.
`bview-module-mgr`	Enables broadview module manager debugging messages.
`bview-sb-plugin`	Enables broadview south-bound plugin debugging messages.
`bview-sb-redirect`	Enables broadview south-bound redirector debugging messages.
`bview-sys-json`	Enables broadview system json encoding debugging messages.
`bview-sys-utils`	Enables broadview system utilities debugging messages.
`daemon-cli`	Enables telemetry daemon CLI debugging messages.
`daemon-db`	Enables telemetry daemon database debugging messages.

Parameter	Description
`daemon-msg-queue`	Enables telemetry daemon message queue debugging messages.
`daemon-mutex`	Enables telemetry daemon mutex debugging messages.
`daemon-nsm-client`	Enables telemetry daemon Network Service Module (NSM) client debugging messages.
`daemon-push`	Enables telemetry daemon asynchronous report push debugging messages.
`daemon-smi-server`	Enables telemetry daemon Simple Management Interface (SMI) server debugging messages.
`if-i2n`	Obtain the interface name by its index number.
`if-n2i`	Obtain the interface index number by its name.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables broadview heartbeat debugging messages:

```
Switch> debug telemetry bview-heartbeat
```

Restrictions

Options `if-i2n` and `if-n2i` are not available in Global Configuration mode.

debug telnet

Enables or disables Telnet server debugging.

By default, Telnet debugging is disabled.

Syntax

[no] debug telnet server

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the debugging of the Telnet server:

```
Switch> debug telnet server
```

debug um

Enables or disables User Management (UM) debugging.

By default, UM debugging is disabled.

Syntax

[no] debug um

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables UM debugging:

```
Switch> debug um
```

debug vlag

Enables or disables Virtual Link Aggregation Group (vLAG) debugging.

By default, vLAG debugging is disabled.

Syntax

```
[no] debug vlag {all|cons|error|fdb|hc|{instance <1-64>|all}|
main|sm}
```

where:

Parameter	Description
all	Enables all vLAG debugging parameters.
cons	Enables vLAG consistency check debugging.
error	Enables vLAG error debugging.
fdb	Enables vLAG Forwarding Database (FDB) thread debugging.
hc	Enables vLAG health check thread debugging.
instance *<1-64>*	Enables vLAG instance debugging of the specified instance.
instance all	Enables vLAG instance debugging of all vLAG instances.
main	Enables vLAG main thread debugging.
sm	Enables vLAG State Machine (SM) thread debugging.

Modes

Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables vLAG error debugging:

```
Switch(config)# debug vlag error
```

debug vlan

Enables or disables Virtual Local Area Network (VLAN) debugging.

By default, VLAN debugging is disabled.

Syntax

`[no] debug vlan {all|error|message {both|rx|tx}}`

where:

Parameter	Description
`all`	Enables all VLAN debugging parameters.
`error`	Enables only VLAN error debugging.
`message`	Enables only VLAN message debugging.
`both`	Enables VLAN debugging for received and transmitted messages.
`rx`	Enables VLAN debugging only for received messages.
`tx`	Enables VLAN debugging only for transmitted messages.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all VLAN parameters:

```
Switch> debug vlan all
```

debug vrrp engine

Enables or disables debugging of the Virtual Router Redundancy Protocol (VRRP) engine. To show VRRP debugging messages, you also need to run the following commands:

```
Switch(config)# logging console 7
Switch(config)# logging level vrrp 7
```

By default, VRRP engine debugging is disabled.

Syntax

[no] debug vrrp engine {all|events|packet {recv|send}|vlag {error|event}}

where:

Parameter	Description
all	Enables all VRRP debugging parameters.
events	Enables only VRRP event debugging.
packet recv	Enables only VRRP received packets debugging.
packet send	Enables only VRRP sent packets debugging.
vlag error	Enables only the debugging of VRRP Virtual Link Aggregation Group (vLAG) errors.
vlag event	Enables only the debugging of VRRP vLAG events.

Modes

● User EXEC mode

● Privileged EXEC mode

● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables debugging of all VRRP engine events:

```
Switch> debug vrrp engine events
```

no debug all

Disables the debugging of all switch processes.

Syntax

no debug all

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables the debugging of all switch processes:

```
Switch> no debug all
```

Chapter 4. Configuration Mode Commands

This chapter describes how to enter Global Configuration Mode and the commands available in this mode.

configure

Enters Global Configuration Mode.

Syntax

```
configure [device]
```

Modes

Privileged EXEC Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters Global Configuration Mode:

```
Switch# configure terminal
Switch(config)#
```

aaa accounting console group

Enables or disables Authentication, Authorization, and Accounting (AAA) accounting using the specified list of Terminal Access Controller Access-Control System Plus (TACACS+) or Remote Authentication Dial-In User Service (RADIUS). This command configures AAA accounting for console user login authentication.

Syntax

[no] aaa accounting console group *<list of groups>* **[local]**

where:

Parameter	Function
list of groups	The name of the group of TACACS+ or RADIUS servers. Up to 8 groups can be specified.
local	If the configured TACACS+ or RADIUS server group is unavailable, local accounting is used.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables AAA accounting using the TACACS+ or RADIUS server groups tacacs-s1 and tacacs-s2:

```
Switch(config)# aaa accounting console groups tacacs-s1 tacacs-s2
```

aaa accounting console local

Enables or disables Authentication, Authorization, and Accounting (AAA) accounting locally. This command configures AAA accounting for console user login authentication.

Syntax

```
[no] aaa accounting console local
```

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables AAA accounting locally:

```
Switch(config)# aaa accounting console local
```

aaa accounting default group

Enables or disables Authentication, Authorization, and Accounting (AAA) accounting using the specified list of Terminal Access Controller Access-Control System Plus (TACACS+) or Remote Authentication Dial-In User Service (RADIUS) server groups. This command configures AAA accounting for user login authentication using remote protocol connections such as SSH or Telnet.

Syntax

[no] aaa accounting default group *<list of groups>* **[local]**

where:

Parameter	Function
list of groups	The name of the group of TACACS+ or RADIUS servers. Up to 8 groups can be specified.
local	If the configured TACACS+ or RADIUS server group is unavailable, local accounting is used.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables AAA accounting using the TACACS+ or RADIUS server groups `tacacs-s1` and `tacacs-s2`:

```
Switch(config)# aaa accounting default groups tacacs-s1 tacacs-s2
```

aaa accounting default local

Enables of disables Authentication, Authorization, and Accounting (AAA) accounting locally. This command configures AAA accounting for user login authentication using remote protocol connections such as SSH or Telnet.

Syntax

`[no] aaa accounting default local`

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables AAA accounting locally:

```
Switch(config)# aaa accounting default local
```

aaa authentication login console

Enables or disables Authentication, Authorization, and Accounting (AAA) console user login authentication.

Syntax

[no] aaa authentication login console {group *<list of groups>***| local|none}**

where:

Parameter	Function
list of groups	The name of the group of TACACS+, LDAP or RADIUS servers. Up to 8 groups can be specified. The groups are accessed in the specified order. The list of groups can be followed by local, none, or both. They are used if the TACACS+, LDAP or RADIUS server group is unavailable.
local	Local user database is used for authentication.
none	No user authentication is required.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables AAA console user login authentication using local authentication:

```
Switch(config)# aaa authentication login console local
```

aaa authentication login default

Enables or disables Authentication, Authorization, and Accounting (AAA) remote user login authentication for remote protocol connections such as SSH or Telnet.

Syntax

[no] aaa authentication login default {group *<list of groups>***| local|none}**

where:

Parameter	Function
list of groups	The name of the group of TACACS+, LDAP or RADIUS servers. Up to 8 groups can be specified. The groups are accessed in the specified order. The list of groups can be followed by local, none, or both. They are used if the TACACS+, LDAP or RADIUS server group is unavailable.
local	Local user database is used for authentication.
none	No user authentication is required.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables AAA remote user login authentication using local authentication:

```
Switch(config)# aaa authentication login default local
```

aaa authentication login error-enable

Enable or disables the displays of errors when the user fails to authenticate.

Syntax

[no] aaa authentication login error-enable

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the show of errors when the user fails to authenticate:

```
Switch(config)# aaa authentication login error-enable
```

aaa authentication login mschapv2 enable

Enable or disables Microsoft Challenge/Reply Handshake Protocol version 2 (MSChapv2) authentication option.

Syntax

[no] aaa authentication login mschapv2 enable

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables the MSChapv2 authentication option:

```
Switch(config)# aaa authentication login mschapv2 enable
```

aaa authorization

Enables of disables User EXEC and Configuration command modes level authorization.

Syntax

```
[no] aaa authorization {commands|config-commands} default
{group <list of groups>|
local}
```

where:

Parameter	Function
commands	Enables authorization for all User EXEC mode commands.
config-commands	Enables authorization for all Configuration mode commands.
group	The authorization process will use a list of Terminal Access Controller Access-Control System Plus (TACACS+) server groups.
list of groups	The name of the group of TACACS+ servers. Up to 8 groups can be specified. The groups are accessed in the specified order. The list of groups can be followed by local. This is used if the TACACS+ server group is unavailable.
local	Specifies that the local user database will be used for authorization.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **config-commands** option.

Example

The following command enables User EXEC command level authorization using local authorization:

```
Switch(config)# aaa authorization commands default local
```

aaa group server

Creates or deletes a group of Terminal Access Controller Access-Control System Plus (TACACS+), Lightweight Directory Access Protocol (LDAP) or Remote Authentication Dial-In User Service (RADIUS) servers for Authentication, Authorization, and Accounting (AAA). After creating a group, you enter its Server Configuration command mode.

Syntax

[no] aaa group server {ldap|radius|tacacs+} *<server group name>*

where:

Parameter	Function
ldap	Creates a LDAP server group.
radius	Creates a RADIUS server group.
tacacs+	Creates a TACACS+ server group.
server group name	The name of the server group. The *server group name* can be up to 127 characters in length, must start with a letter, and must contain only lowercase letters and numbers.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.3	Added **radius** option.
10.6	Added **ldap** option.

Examples

The following command creates TACACS+ server group 'tacacs-group-1':

```
Switch(config)# aaa group server tacacs+ tacacs-group-1
```

The following command creates RADIUS server group 'radius-group-1':

```
Switch(config)# aaa group server radius radius-group-1
```

Restrictions

- The server group name cannot be *radius*, *tacacs+*, or *ldap*.
- A default group named *tacacs+* includes all TACACS+ servers.
- A default group named *radius* includes all RADIUS servers.
- A default group named *ldap* includes all LDAP servers.

aaa local authentication attempts max-fail

Sets the number of unsuccessful authentication attempts until a user is locked out. To remove this limit use the **no** form of the command.

By default, the number of unsuccessful authentication attempts is unlimited.

Syntax

[no] aaa local authentication attempts max-fail *<number of attempts>*

where:

Parameter	Function
number of attempts	The maximum number of unsuccessful authentication attempts. The *number of attempts* is an integer from 1 to 25.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the number of unsuccessful authentication attempts until a user is locked out to 3:

```
Switch(config)# aaa local authentication attempts max-fail 3
```

Restrictions

An administrator cannot be locked out.

aaa user default-role

Enables or disables users to login even if the TACACS+ server does not provide a role. The default role is network-operator. If this option is disabled then users without a role provided by the TACACS+ server will be unable to login.

Syntax

`aaa user default-role`

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables a user to login even if the TACACS+ server does not provide a role:

```
Switch(config)# aaa user default-role
```

alias

Creates an alias command that replaces an already defined CLI command. It can be used to create an alias command that acts as an abbreviation of a CLI command or as a replacement for an entire command syntax.

Syntax

alias *<command alias>* *<replaced command>*

where:

Parameter	Description
command alias	The string that will replace the specified command. The *command alias* must contain only alphanumeric characters and must start with a letter. It can be up to 30 characters in length.
replaced command	The command syntax that will be replaced by the command alias.

To delete a command alias, use the following command:

no alias {*<command alias>***|all}**

where:

Parameter	Description
command alias	Deletes the specified command alias.
all	Deletes all the configured command aliases.

Modes

Global Configuration Mode

History

Release	Modification
10.4	The command was introduced.

Examples

The following command creates a command alias (dv) that replaces the command **show version**:

```
Switch(config)# alias dv show version
Switch(config)# dv

Lenovo Networking Operating System (NOS) Software
Technical Assistance Center: http://www.lenovo.com
Copyright (C) Lenovo, 2016.  All rights reserved.

Software:
  Bootloader version: 10.4.2.0
  System version: 10.4.2.0
  System compile time: Thu Apr 13 20:46:29 PDT 2017
...
```

The following command creates a command alias (dvlan135) that replaces the command **show vlan id 135**:

```
Switch(config)# alias dvlan135 show vlan id 135
Switch(config)# dvlan135

Flags:
u - untagged egress traffic for this VLAN
t - tagged egress traffic for this VLAN

d - auto-provisioned VLAN
h - static and auto-provisioned VLAN

VLAN     Name                         Status  IPMC FLOOD Ports
======== ============================ ======= ========== ============
135      VLAN0135                     ACTIVE  IPv4,IPv6  Ethernet1/12(u)
```

Restrictions

- The command alias must be unique. Multiple command aliases can be assigned to the same command, but multiple commands cannot be assigned to the same command alias. For example:

```
Switch(config)# alias dv show version
Switch(config)# alias dver show version
Switch# show alias

CLI alias information
Total number : 2
====================
dv    : show version
dver  : show version
```

- Command aliases take precedence over the CLI command syntax. For example, you configure the following command alias:

```
Switch(config)# alias lacp show
```

The following CLI command is invalid because the previously configured alias overwrites **lacp** with **show**.

```
Switch(config)# lacp system-priority
% Unrecognized command
```

arp access-list

Creates or removes an Address Resolution Protocol (ARP) Access Control List (ACL). After creating an ACL, you enter its Configuration command mode.

Syntax

[no] arp access-list *<ACL name>*

where:

Parameter	Function
ACL name	The name of the ARP ACL. The *ACL name* can be up to 64 characters in length.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates an ARP ACL named 'arp-acl-1':

```
Switch(config)# arp access-list arp-acl-1
```

banner motd

Enables or disables the message of the day (MOTD) banner displayed of the user logs in.

Syntax

[no] banner motd {<*message*>**|default}**

where:

Parameter	Function
message	The message that is displayed after a user logs in.
default	Resets the MOTD banner to the default message.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the MOTD banner to show 'This is a test.':

```
Switch(config)# banner motd This is a test.
Switch(config)# exit
Switch# show banner motd

This is a test.
```

bfd gtsm

Enables or disables the Bidirectional Forwarding Detection (BFD) Generalized TTL Security Mechanism (GTSM).

By default, BFD GTSM is disabled.

Syntax

bfd gtsm {enable|disable}

where:

Parameter	Function
enable	Enables BFD GTSM.
disable	Disables BFD GTSM.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables BFD GTSM:

```
Switch(config)# bfd gtsm enable
```

bfd gtsm ttl

Configures the Bidirectional Forwarding Detection (BFD) Generalized TTL Security Mechanism (GTSM) hop limit or Time-to-Live (TTL).

Use the **no** form to reset the hop limit to its default value.

The default hop limit is 255.

Syntax

[no] bfd gtsm ttl *<hop limit>*

where:

Parameter	Function
hop limit	Specifies the minimum hop limit value (inbound ttl) a BFD packet can have before it is discarded. The *hop limit* is an integer from 1 to 255.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configure the BFD hop limit to 30:

```
Switch(config)# bfd gtsm ttl 30
```

bfd interval

Configures Bidirectional Forwarding Detection (BFD) global session parameters, including sent and received packet rates and hello messages multiplier.

Use the **no** form to delete a configured set of parameters.

Syntax

[no] bfd [ipv4|ipv6] interval *<send packet rate>* **minrx** *<receive packet rate>* **multiplier** *<hello multiplier>*

where:

Parameter	Function
ipv4	Configures BFD parameters only for IPv4 addresses.
ipv6	Configures BFD parameters only for IPv6 addresses.
interval *send packet rate*	Specifies how often the switch is able to send BFD control or echo packets to other BFD peers. The *send packet rate* is from 50 to 999 milliseconds. The default value is 100 milliseconds.
minrx *receive packet rate*	Specifies the minimum time period during which the switch is able to receive BFD control or echo packets from other BFD peers. The *receive packet rate* is from 50 to 999 milliseconds. The default value is 100 milliseconds.
multiplier *hello multiplier*	Specifies the number of consecutive BFD control or echo packets that have to be missed from a BFD peer before the switch declares that peer unavailable and informs the BFD clients of the failure. The *hello multiplier* is an integer from 3 to 50. The default value is 3.

Modes

- Global Configuration mode
- Interface mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the desired BFD send packet rate to 120 milliseconds, the minimum desired receive rate to 120 milliseconds, and the hello multiplier to 7:

```
Switch(config)# bfd interval 120 minrx 120 multiplier 7
```

bfd multihop-peer auth

Configures Bidirectional Forwarding Detection (BFD) authentication for a multi-hop peer.

Use the **no** form of the command to disable the use of a BFD authentication.

By default, BFD authentication is disabled.

Syntax

[no] bfd multihop-peer *<peer address>* **auth type {keyed-md5| keyed-sha1|meticulous-keyed-md5|meticulous-keyed-sha1| simple} {key-chain** *<key chain name>***|key-id** *<key number>* **key** *<authentication key string>***}**

where:

Parameter	Function
peer address	Configures the BFD authentication key for the specified destination. The *peer address* can be either an IPv4 address or an IPv6 address.
type	Specify the type of encryption used.
keyed-md5	Keyed Message Digest 5 hash algorithm.
keyed-sha1	Keyed Secure Hash Algorithm I.
meticulous-keyed-md5	Meticulous keyed Message Digest 5 hash algorithm.
meticulous-keyed-sha1	Meticulous keyed Secure Hash Algorithm I.
simple	Plain-text password.
key-chain *key chain name*	Specifies the use an already configured authentication key chain. The maximum length for the *key chain name* is 32 characters.
key-id *key number*	Specifies the use of a new authentication key. The *key number* is from 0 to 255.
key *authentication key string*	Specifies the key to be used for BFD authentication. It will be encrypted with the previously selected algorithm.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command configures BFD authentication using Keyed SHA-1 encryption and key chain 'bfd-chain-3':

```
Switch(config)# bfd multihop-peer 10.90.200.15 auth type keyed-sha1
key-chain bfd-chain-3
```

The following command configures BFD authentication using Keyed SHA-1 encryption and a new key:

```
Switch(config)# bfd multihop-peer 10.90.200.15 auth type keyed-sha1
key-id 35 key test-bfd-auth-key
```

bfd multihop-peer interval

Configures Bidirectional Forwarding Detection (BFD) multi-hop peer parameters, including the desired sent and received packet rates and hello messages multiplier.

Use the **no** form to delete a configured set of parameters.

Syntax

[no] bfd multihop-peer *<peer address>* **interval** *<send packet rate>* **minrx** *<receive packet rate>* **multiplier** *<hello multiplier>*

where:

Parameter	Function
peer address	Configures BFD parameters for the specified destination. The *peer address* can be either an IPv4 address or an IPv6 address.
interval *send packet rate*	Specifies how often the switch is able to send BFD control or echo packets to other BFD peers. The *send packet rate* is from 50 to 999 milliseconds. The default value is 100 milliseconds.
minrx *receive packet rate*	Specifies the minimum time period during which the switch is able to receive BFD control or echo packets from other BFD peers. The *receive packet rate* is from 50 to 999 milliseconds. The default value is 100 milliseconds.
multiplier *hello multiplier*	Specifies the number of consecutive BFD control or echo packets that have to be missed from a BFD peer before the switch declares that peer unavailable and informs the BFD clients of the failure. The *hello multiplier* is an integer from 3 to 50. The default value is 3.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a multi-hop peer BFD parameters:

```
Switch(config)# bfd multihop-peer 10.145.11.123 interval 120 minrx 120
multiplier 7
```

bfd slow-timer

Globally configures the slow-timer used in the Bidirectional Forwarding Detection (BFD). This value determines how fast BFD establishes new sessions and at what speed asynchronous sessions use for BFD control packets when the echo function is enabled. The slow-timer value is used as the new control packet interval, while echo packets use the configured BFD intervals.

Use the **no** form of this command to reset the slow-timer to its default value.

The default value is 2000 milliseconds.

Syntax

[no] bfd slow-timer *<slow-timer interval>*

where:

Parameter	Function
slow-timer interval	The time interval used for the slow-timer in the BFD echo function. The *slow-timer interval* is from 1000 to 30000 milliseconds.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a BFD slow-timer interval of 3000 milliseconds:

```
Switch(config)# bfd slow-timer 3000
```

cee enable

Globally enables or disables Converged Enhanced Ethernet (CEE) on the switch. Data Center Bridging Capabilities eXchange (DCBX), Priority Flow Control (PFC), and Enhanced Transmission Selection (ETS) are also globally enabled or disabled by this command.

By default, CEE is disabled on the switch.

Syntax

[no] cee enable

Using **no** before the command disables CEE.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command globally enables CEE on the switch:

```
Switch(config)# cee enable
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

cee app-proto

Configures an application protocol to be sent to the Data Center Bridging eXchange Capability (DCBX) peer.

Syntax

cee app-proto *<application name>* **{ethertype** *<ethertype>***|fcoe|iscsi| roce|rocev2|tcp destination-port** *<service port>***|udp destination-port** *<service port>***} [priority** *<priority>***]**

no cee app-proto *<application name>*

where:

Parameter	Description
application name	The description of the configured application protocol. The *application name* can be up to 63 characters in length.
ethertype *ethertype*	Configures a custom ethertype. The *ethertype* value in hexadecimal format: *0xHHHH*. For example, 0x8947.
fcoe	Selects Fibre Channel over Ethernet (FCoE) as the application protocol. Ethertype is set to 0x8906 and priority to 3.
iscsi	Selects Internet Small Computer Systems Interface (iSCSI) as the application protocol. TCP destination port is set to 3260 and priority to 4.
roce	Selects RDMA over Converged Ethernet (RoCE) as the application protocol. Ethertype is set to 0x8915 and priority to 3.
rocev2	Selects RDMA over Converged Ethernet version 2 (RoCEv2) as the application protocol. UDP destination port is set to 4791 and priority to 3.
tcp	Configures a custom TCP service port.
udp	Configures a custom UDP service port.
destination-port *service port*	Configures a custom service port. The *service port* is an integer from 1 to 65536.
priority *priority*	Configures a custom priority. The *priority* is an integer from 0 to 7.

Using the **no** form of the command will remove the specified application protocol.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Examples

The following command configures custom ethertype and priority values:

```
Switch(config)# cee app-proto Ether8947 ethertype 0x8947 priority 3
```

The following command configures iSCSI as the application protocol:

```
Switch(config)# cee app-proto myIscsi iscsi
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

cee ets bandwidth-percentage

Configures the bandwidth percentage allocated for each Enhanced Transmission Selection (ETS) priority group.

Note: The total configured bandwidth percentage of each priority group cannot exceed 100%.

Syntax

cee ets bandwidth-percentage *<priority group ID>* *<bandwidth percentage>* **[**<priority group ID>* *<bandwidth percentage>***] [**<priority group ID>* *<bandwidth percentage>***] [**<priority group ID>* *<bandwidth percentage>***] [**<priority group ID>* *<bandwidth percentage>***] [**<priority group ID>* *<bandwidth percentage>***] [**<priority group ID>* *<bandwidth percentage>***] [**<priority group ID>* *<bandwidth percentage>***]**

where:

Parameter	Description
priority group ID	The priority group for which to configure the bandwidth percentage. The *priority group ID* is an integer between 0 and 7.
bandwidth percentage	The bandwidth percentage allocated for the specified priority group. The *bandwidth percentage* is an integer between 0 and 100.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures a bandwidth percentage of 15% for priority group 1, 35% for priority group 2, 23% for priority 3, and 27% for priority 4:

```
Switch(config)# cee ets bandwidth-percentage 1 15 2 35 3 23 4 27
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

cee ets priority-group pgid

Configures the specified Enhanced Transmission Selection (ETS) priority group.

Syntax

[no] cee ets priority-group pgid *<priority group ID>* **{description**
*<description>***|priority** *<traffic priority>* **[***<traffic priority>* **...]}**

where:

Parameter	Description
priority group ID	The ETS priority group to be configured. The *priority group ID* is an integer between 0 and 7, or 15.
description *description*	Configures the description of the specified ETS priority group.
priority *traffic priority*	Configures the 802.1p priority value attributed to the ETS priority group. The *traffic priority* value is an integer from 0 to 7.

Using **no** before the command removes the description or the traffic priority of the specified priority group.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Examples

The following command configures a description for priority group 5:

```
Switch(config)# cee ets priority-group pgid 5 description pgID_5
```

The following command configures a priority value for priority group 5:

```
Switch(config)# cee ets priority-group pgid 5 priority 3
```

Restrictions

● This command is not supported on the NE1032T and the NE1072T.

● The priority value attributed to priority group 15 cannot be removed.

cee pfc enable

Globally enables or disables Priority Flow Control (PFC) on the switch.

By default, PFC is disabled on the switch.

Note: By default, PFC is enabled on all switch interfaces. PFC will not function on an interface until PFC is also globally enabled.

Syntax

`[no] cee pfc enable`

Using **no** before the command disables PFC.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command will enable PFC on the switch:

```
Switch(config)# cee pfc enable
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

Related Commands

Command	Description
cee pfc enable	Enable or disable PFC on an interface.

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cee pfc priority

Configures the Priority Flow Control (PFC) priority state.

By default, PFC priority 3 is enabled on the switch.

Syntax

[no] cee pfc priority *<priority>* **{enable|description** *<description>*}

where:

Parameter	Description
priority	The PFC priority value (an integer from 0 to 7).
enable	Enables the configured PFC priority.
description	Configures the description of the specified PFC priority.
description *description*	The description of the specified PFC priority.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.
10.4	The command was updated to support the NE1032,NE1032T, NE1072T, NE10032, and NE2572.

Examples

The following command enables PFC priority 6 on the switch:

```
Switch(config)# cee pfc priority 6 enable
```

The following command adds a description for PFC priority 3:

```
Switch(config)# cee pfc priority 3 description PFC_priority_3
```

Restrictions

- This command is not supported on the NE1032T or the NE1072T.

- G8272, G8296, G8332, NE1032, and NE2572: up to two PFC priorities can be simultaneously enabled on the switch.

- NE10032: only one PFC priority can be enabled on the switch at any time.

- You cannot configure switch interfaces with different PFC priorities. The same PFC priority is enabled on all interfaces.

class-map

Creates or deletes a class map that is used to match packets to a specified class. After creating a class map, you enter Class Map Configuration mode.

Syntax

[no] class-map {match-all|match-any} *<class map name>*

where:

Parameter	Function
match-all	Configures the class map to use the logical AND function for packet evaluation when dealing with multiple match rules.
match-any	Configures the class map to use the logical OR function for packet evaluation when dealing with multiple match rules.
class map name	The name of the class map.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates class map 'cmap-01' that uses the logical OR function when evaluating packets:

```
Switch(config)# class-map match-any cmap-01
```

class-map type qos

Creates or deletes a Quality of Service (QoS) class map that is used to match packets to a specified class. After creating a class map, you enter QoS Class Map Configuration mode.

Syntax

[no] class-map type qos {match-all|match-any} *<class map name>*

where:

Parameter	Function
match-all	Configures the class map to use the logical AND function for packet evaluation when dealing with multiple match rules.
match-any	Configures the class map to use the logical OR function for packet evaluation when dealing with multiple match rules.
class map name	The name of the class map.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates QoS class map 'cmap-qos-01' that uses the logical AND function when evaluating packets:

```
Switch(config)# class-map type qos match-all cmap-qos-01
```

class-map type queuing

Modifies a queuing class map (that is used to match packets to a specified class) by entering Queuing Class Map Configuration mode.

Syntax

class-map type queuing match-any *<queue name>*

where:

Parameter	Function
match-any	Configures the class map to use the logical OR function for packet evaluation when dealing with multiple match rules.
queue name	The name of the queue. The possible options are: ● `1p7q1t-out-q-default` (queue 0 or default queue) ● `1p7q1t-out-pq1` (queue 1 or priority queue) ● `1p7q1t-out-q2` (queue 2) ● `1p7q1t-out-q3` (queue 3) ● `1p7q1t-out-q4` (queue 4) ● `1p7q1t-out-q5` (queue 5) ● `1p7q1t-out-q6` (queue 6) ● `1p7q1t-out-q7` (queue 7)

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters the a queuing class menu in order to modify it:

```
Switch(config)# class-map type queuing match-any 1p7q1t-out-q2
```

clock format

Configures the system time format.

Syntax

```
clock format {12|24}
```

where:

Parameter	Function
12	Displays the time in 12 hour format. This is the default time format.
24	Displays the time in 24 hour format.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the system time in 24 hour format:

```
Switch(config)# clock format 24
```

clock summer-time

Enables or disables the use of a summer time (daylight saving time) offset.

Syntax

[no] clock summer-time *<time zone name>* **[***<start week> <start day> <start month> <start time> <end week> <end day> <end month> <end time>* **[***<offset>***]]**

where:

Parameter	Function
time zone name	The name of the time zone in 3 character format, such as PST, MST, CST, EST etc.
start week	The starting week of the offset. The range is from 1 (first week of the month) to 5 (last week of the month).
start day	The starting day of the offset. The range is from Monday to Sunday.
start month	The starting month of the offset. The range is from January to December.
start time	The starting time of the offset. The format is *HH:mm*, where: ● *HH* is the hour of the day (range is 00 to 24) ● *mm* is the minute of the hour (range is 00 to 60)
end week	The ending week of the offset. The range is from 1 (first week of the month) to 5 (last week of the month).
end day	The ending day of the offset. The range is from Monday to Sunday.
end month	The ending month of the offset. The range is from January to December.
end time	The ending time of the offset. The format is *HH:mm*, where: ● *HH* is the hour of the day (range is 00 to 24) ● *mm* is the minute of the hour (range is 00 to 60)
offset	The number of minutes to offset the time. The *offset* is from 1 to 1440.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables summer-time for Pacific Standard Time:

```
Switch(config)# clock summer-time PST
```

clock timezone

Enables or disables the use of time zones.

Syntax

[no] clock timezone *<time zone>* *<hour offset>* *<minute offset>*

where:

Parameter	Function
time zone	The name of the time zone in 3 character format, such as PST, MST, CST, or EST.
hour offset	The hour offset from UTC. The range is from -23 to 23.
minute offset	The minute offset from UTC. The range is from 0 to 59.

Using **no** before the command without arguments disables the use of time zones.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the use of the EST time zone with an offset of -5 hour and 0 minutes from UTC:

```
Switch(config)# clock timezone EST -5 0
```

enable password

Enables or disables the use of a password to enter Privileged EXEC mode.

Syntax

[no] enable password *<password>*

where:

Parameter	Function
password	The password required to enter Privileged EXEC mode. The *password* can be up to 20 characters long.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures `code-sec` as the encrypted password required to enter Privileged EXEC mode:

```
Switch(config)# enable password code-sec
```

end

Exits the current command mode and enters Privileged EXEC mode.

Syntax

end

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command exits the current command mode and enters Privileged EXEC mode:

```
Switch(config)# end
Switch#
```

errdisable recovery cause bpduguard

Enables or disables the timeout mechanism for a port to be recovered automatically from being operationally shut down by Bridge Protocol Data Units (BPDU) guard.

Syntax

[no] errdisable recovery cause bpduguard

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables error recovery:

```
Switch(config)# errdisable recovery cause bpduguard
```

errdisable recovery interval

Enables and disables a time interval after which an error-disabled port shall be recovered automatically.

Syntax

[no] errdisable recovery interval *<time interval>*

where:

Parameter	Function
time interval	The time that the switch waits until it will automatically recover an error-disabled port. The *time interval* is from 30 to 65535 seconds. The default value is 300 seconds.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the error recovery time interval to 600 seconds:

```
Switch(config)# errdisable recovery interval 600
```

event-log

Enables and disables user action logging on terminals.

Syntax

[no] event-log {cli|console|rest|terminal} enable

where:

Parameter	Function
cli	Enables or disables the CLI transaction logging.
console	Enables or disables the user transaction logging on console.
rest	Enables or disables the REST transaction logging.
terminal	Enables or disables the user transaction logging on terminal (Telnet/SSH).

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command configures the CLI logging:

```
Switch(config)# event-log cli enable
```

feature

Enables or disables certain switch processes.

Syntax

```
[no] feature {dhcp|ntp|restApi
[http]|ssh|tacacs+|ldap|telemetry|
telnet|sflow}
```

where:

Parameter	Function
dhcp	Enables or disables the Dynamic Host Configuration Protocol (DHCP). By default, DHCP is enabled on the management port, but disabled on all other switch interfaces.
ntp	Enables or disables the Network Time Protocol (NTP). By default, NTP is enabled on the switch.
restApi	Enables or disables the REpresentational State Transfer (REST) server. By default, the RESP API is enabled on the switch. Please refer to the *Lenovo REST API Programming Guide* for details on how to use the Lenovo REST API.
http	Enables or disables the REST server to listen in Hypertext Transfer Protocol (HTTP) mode on port 8090. By default, the REST server is disabled from listening in HTTP mode.
ssh	Enables or disables the Secure Shell (SSH) service. By default, SSH is enabled on the switch.
tacacs+	Enables or disables the Terminal Access Controller Access-Control System Plus (TACACS+) service. By default, the TACACS+ service is disabled on the switch.
ldap	Enables or disables the Lightweight Directory Access Protocol (LDAP) service. By default, the LDAP service is disabled on the switch.
telemetry	Enables or disables the Telemetry service. By default, the Telemetry service is enabled on the switch.
telnet	Enables or disables the Telnet service. By default, Telnet is enabled on the switch.
sflow	Enables or disables the sFlow service. By default, sFlow is disabled on the switch.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added **telemetry** option.
10.6	Added **ldap** and **sflow** options.

Example

The following command enables the REST service:

```
Switch(config)# feature restApi
```

graceful-restart ospf helper max-grace-period

The Cloud NOS design provides a complete separation of its control plane from the forwarding plane, thus allowing the restart or upgrade of control plane software without disturbing forwarding. Such a restart/upgrade is called graceful-restart.

The router attempting a graceful restart originates link-local Opaque-LSAs, called Grace-LSAs, announcing its intention to perform a graceful restart within a specified amount of time called grace period.

This commands configures the maximum grace period. To disable the grace period use the **no** form of the command.

Syntax

[no] graceful-restart ospf helper max-grace-period *<grace period>*

where:

Parameter	Function
grace period	The maximum grace period in seconds. The *grace period* is from 1 to 1800. The default value is 60.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the grace period to 300 seconds:

```
Switch(config)# graceful-restart ospf helper max-grace-period 300
```

graceful-restart ospf helper never

The Cloud NOS design provides a complete separation of its control plane from the forwarding plane, thus allowing the restart or upgrade of control plane software without disturbing forwarding. Such a restart/upgrade is called graceful-restart.

In graceful-restart the OSPF neighbors help the restarting router by announcing links to it in their LSAs. These neighbors are said to be in "helper mode" for the duration of the graceful restart.

This commands enables or disables helper mode. Helper mode is enabled by default.

Note: When this command is enabled, helper mode is disabled on the router. When using the **no** form of this command, helper mode is enabled on the router.

Syntax

[no] graceful-restart ospf helper never [router-id *<neighbor address>***]**

where:

Parameter	Function
router-id *neighbor address*	Helper mode will be enabled or disabled only for the specified OSPF neighbor. The *neighbor address* is specified in IPv4 address format.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables helper mode on the router:

```
Switch(config)# graceful-restart ospf helper never
```

hardware ecmp hash-offset

Configures the Open Shortest Path First (OSPF) Equal Cost Multiple Paths (ECMP) hash offset.

Syntax

[no] hardware ecmp hash-offset *<offset value>*

where:

Parameter	Function
offset value	The value of the ECMP hash offset. The *offset value* is from 0 to 15. The default value is 0.

Using **no** before the command disables the OSPF hash offset.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures an ECMP hash offset of 3:

```
Switch(config)# hardware ecmp hash-offset 3
```

hardware esn

A customer support representative can assign your switch an Entitlement Serial Number (ESN) at the time you request support. The ESN helps to locate your switch's identifying information when you call technical support for help in future.

This command configures the switch's ESN.

Syntax

hardware esn *<serial number>*

where:

Parameter	Function
serial number	The ESN assigned to the switch by a customer support representative. The *serial number* is valid only as a 7 to 11 characters long alpha-numeric string for G8332, G8272 and G8296 switches.
	The following platforms require a strict 7 characters long serial number: ● NE1032 ● NE1032T ● NE1072T ● NE10032 ● NE2572

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the switch ESN as 'LNV109ty442':

```
Switch(config)# hardware esn LNV109ty442
```

hardware mtm

Configures the switch's Machine Type Model (MTM) number. The MTM number is applied when the switch reloads and persist across firmware upgrades.

Syntax

`hardware mtm` *<serial number>*

where:

Parameter	Function
serial number	The new MTM number for the switch. The *serial number* depends on the switch model. Valid serial numbers are listed following this table.

You can change the switch MTM number with one of the following:

- G8272:
  - 7159-CFV
  - 7159-CRW
  - 7159-HCV
  - 7159-HCW
  - 7159-HCR
  - 7159-HCF
  - 7159-HCN
- G8296:
  - 7159-GF5
  - 7159-GR6
  - 7159-HC5
  - 7159-HC6
- G8332:
  - 7159-BFX
  - 7159-BRX
  - 7159-CFX
  - 7159-HCE
  - 7159-HDE
  - 7159-HC8

- NE1032:
  - 7159-A1X
  - 7159-A2X
  - 7159-HD1
  - 7159-HD2
  - 7159-HDF
- NE1032T:
  - 7159-B1X
  - 7159-B2X
  - 7159-HD3
  - 7159-HD4
- NE1072T:
  - 7159-C1X
  - 7159-C2X
  - 7159-HD5
  - 7159-HD6
  - 7159-HDB
- NE10032:
  - 7159-D1X
  - 7159-D2X
  - 7159-HE1
  - 7159-HE2
- NE2572:
  - 7159-E1X
  - 7159-E2X
  - 7159-HE3
  - 7159-HE4
  - 7159-HEA
  - 7159-HEB

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	The command was updated to support the NE1032,NE1032T, NE1072T, NE10032, and NE2572.

Example

The following command configures the switch MTM number to '1611-16E':

```
Switch(config)# hardware mtm 1611-16E

New MTM value: 1611-16E
Please reset the system for the new changes to take effect.
```

hardware profile portmode

Enables or disables different hardware profiles for the switch ports.

Syntax

For G8272:

[no] hardware profile portmode {72x10G|custom 4x10G ethernet
*<chassis number/port number>***|default}**

where:

Parameter	Function
72x10G	Configures all switch ports as 10Gb SFP+ ports. The switch can be configured with 72 x 10Gb SFP+ ports.
custom 4x10G	Configures the specified QSFP+ ports from 40Gb mode to 4 x 10Gb SFP+ port mode.
ethernet *chassis number/port number*	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* is an integer from 1 to 54.
default	Configures 48 x 10Gb SFP+ ports and 6 x 40Gb QSFP+ ports.

For G8296:

[no] hardware profile portmode {94x10G+8x40G|custom 4x10G
ethernet *<chassis number/port number>***|default}**

where:

Parameter	Function
94x10G+8x40G	Configures the switch with 94 x 10Gb SFP+ ports and 8 x 40Gb QSFP+ ports.
custom 4x10G	Configures the specified QSFP+ ports from 40Gb mode to 4 x 10Gb SFP+ port mode.
ethernet *chassis number/port number*	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* is an integer from 1 to 96.
default	Configures 86 x 10Gb SFP+ ports and 10 x 40Gb QSFP+ ports.

For G8332:

[no] hardware profile portmode {96x10G+8x40G|custom 4x10G ethernet *<chassis number/port number>***|default}**

where:

Parameter	Function
96x10G+8x40G	Configures the switch with 96 x 10Gb SFP+ ports and 8 x 40Gb QSFP+ ports.
custom 4x10G	Configures the specified QSPF+ ports from 40Gb mode to 4 x 10Gb SFP+ port mode.
ethernet *chassis number/port number*	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* is an integer from 1 to 32.
default	Configures 32 x 40Gb QSFP+ ports and 8 x 40Gb Media Dependent Adapter (MDA) module QSFP+ ports.

For NE1072T:

[no] hardware profile portmode {72x10G|custom 4x10G ethernet *<chassis number/port number>***|default}**

where:

Parameter	Function
72x10G	Configures all switch ports as 10Gb ports. The switch can be configured with 48 x 10Gb Base-T ports and 24 x 10Gb SFP+ ports.
custom 4x10G ethernet	Configures the specified QSFP+ ports from 40Gb mode to 4 x 10Gb SFP+ port mode.
chassis number/port number	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* is an integer from 1 to 54.
default	Configures 48 x 10Gb Base-T ports and 6 x 40Gb QSFP+ ports.

For NE10032:

[no] hardware profile portmode {128x10G|128x25G|32x40G| 64x50G|custom {1x40G|2x50G|4x10G|4x25G} ethernet *<chassis number>***/***port number>***|default}**

where:

Parameter	Function
128x10G	Configures all switch ports as 10Gb SFP+ ports. The switch can be configured with 128 x 10Gb SFP+ ports.
128x25G	Configures the switch ports as 25Gb SFP+ ports. The switch can be configured with 128 x 25Gb SFP+ ports.
32x40G	Configures the switch ports as 40Gb QSFP28 ports. The switch can be configured with 32 x 40Gb QSFP28 ports.
64x50G	Configures the switch ports as 50Gb QSFP28 ports. The switch can be configured with 64 x 50Gb QSFP28 ports.
custom *configuration*	Configures a custom hardware profile for the switch ports where *configuration* is one of the following: ● **1x40G** ● **2x50G** ● **4x10G** ● **4x25G**
1x40G	Configures the specified QSFP28 ports to 40Gb QSFP28 port mode.
2x50G	Configures the specified QSFP28 ports to 2 x 50Gb QSFP28 port mode.
4x10G	Configures the specified QSFP28 ports to 4 x 10Gb SFP28 port mode.
4x25G	Configures the specified QSFP28 ports to 4 x 25Gb SFP28 port mode.
ethernet *chassis number***/***port number*	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* is an integer from 1 to 32.
default	Configures 32 x 100Gb QSFP28 ports.

For NE2572:

```
[no] hardware profile portmode {48x10G+12x50G|48x10G+6x100G|
48x10G+6x40G|48x25G+12x50G|72x10G|72x25G|custom
{1x40G|2x50G|4x10G|4x25G} ethernet <chassis number/port
number>|default}
```

where:

Parameter	Function
48x10G+12x50G	Configures 48 switch ports as 10Gb SFP+ ports and 12 ports as 50Gb QSFP28 ports.
48x10G+6x100G	Configures 48 switch ports as 10Gb SFP+ ports and 6 ports as 100Gb QSFP28 ports.
48x10G+6x40G	Configures the switch ports as 40 Gb SFP+ ports. The switch can be configured with 6 x 40 Gb QSFP28 ports.
48x25G+12x50G	Configures the switch ports as 50 Gb SFP+ ports. The switch can be configured with 12 x 50 Gb QSFP28 ports.
72x10G	Configures all switch ports as 10 Gb SFP+ ports. The switch can be configured with 72 x 10 Gb SFP+ ports.
72x25G	Configures the switch ports as 25 Gb SFP+ ports. The switch can be configured with 72 x 25 Gb SFP+ ports.
custom *configuration*	Configures a custom hardware profile for the switch ports where *configuration* is one of the following: ● **1x40G** ● **2x50G** ● **4x10G** ● **4x25G**
1x40G	Configures the specified QSFP28 ports to 40Gb QSFP28 port mode.
2x50G	Configures the specified QSFP28 ports to 2 x 50Gb QSFP28 port mode.
4x10G	Configures the specified QSFP28 ports to 4 x 10Gb SFP28 port mode.
4x25G	Configures the specified QSFP28 ports to 4 x 25Gb SFP28 port mode.

Parameter	Function
ethernet *chassis number/port number*	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* is an integer from 1 to 32. **Note:** For the first 48 ethernet ports (SFP28), you must specify a four-port ethernet port range. For example: Switch(config)# **hardware profile portmode custom 4x10G ethernet 1/41-44**
default	Configures 48 x 25Gb SFP28 ports and 6 x 100Gb QSFP28 ports.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Commands for the NE1072T, NE10032, and NE2572 were added.
10.6	Updated the **Restrictions** section.

Example

The following command configures all ports for the G8272 as 10 Gb ports:

```
Switch(config)# hardware profile portmode 72x10G
```

Restrictions

- For NE10032 and NE2572, the next port speed combinations are supported:
  - 10G/40G/100G
  - 10G/25G/50G/100G

  The following speed modes cannot co-exist on the same ASIC: 25G/50G and 40G ports.
- This command is unavailable on the NE1032 and the NE1032T.

hostname

Configures or resets the switch network name.

Syntax

[no] hostname *<network name>*

where:

Parameter	Function
network name	The network name of the switch.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command configures the switch network name to 'sw-lab-33':

```
Switch(config)# hostname sw-lab-33
sw-lab-33(config)#
```

The following command resets the switch network name to the default value:

```
sw-lab-33(config)# no hostname
Switch(config)#
```

install license

Install a Feature on Demand (FoD) license.

Syntax

license install {ftp|scp|sftp|tftp|usb1} *<source>*

where:

Parameter	Function
ftp	Installs the FoD license using the File Transfer Protocol (FTP).
scp	Installs the FoD license using the Secure Copy Protocol (SCP).
sftp	Installs the FoD license using the Secure File Transfer Protocol (SFTP).
tftp	Installs the FoD license using the Trivial File Transfer Protocol (TFTP).
usb1	Installs the FoD license using a removable USB drive.
source	The address where the FoD license file can be found.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command installs a FoD license from a USB device:

```
Switch(config)# license install usb1 /FoD/FoD-330T
```

interface

Enter the Interface Configuration Mode.

Syntax

interface {<interface name>**|ethernet** <chassis number**/**port number>**|**
loopback <loopback interface>**|mgmt 0|port-channel** <LAG>**|**
vlan <VLAN ID>**}**

where:

Parameter	Function
interface name	Enters Interface Configuration mode for the named ethernet interface.
ethernet *chassis number***/***port number*	Enters Ethernet Interface Configuration mode for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Enters Loopback Interface Configuration mode for the specified loopback interface (an integer from 0 to 7).
mgmt 0	Enters Management Interface Configuration mode for the specified management interface (0).
port-channel *LAG*	Enters LAG Configuration mode for the specified LAG (an integer from 1-4096).
vlan *VLAN ID*	Enters VLAN Interface Configuration mode for the specified VLAN (an integer from 1-4093).

Mode

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters interface command mode for LAG 4001:

```
Switch(config)# interface port-channel 4001
Switch(config-if)#
```

Restrictions

If you use **interface** *<interface name>*, the command will not work unless an interface with that name exists.

ip arp inspection filter

Adds or removes an Address Resolution Protocol (ARP) inspection filter.

Syntax

[no] ip arp inspection filter *<ACL name>* **vlan** *<VLAN number>*

where:

Parameter	Function
ACL name	The name of the ARP Access Control List (ACL).
vlan	Applies the specified ACL to the list of VLANs.
VLAN number	The VLAN number. Range is from 1 to 4094.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables an ARP inspection filter by applying the ARP ACL 'arp-acl-5' to VLANs 100, 101 and 102:

```
Switch(config)# ip arp inspection filter arp-acl-5 vlan 100-102
```

ip arp timeout

Dynamic ARP entries expire after a set amount of time and then they are removed from the table. The default value is 1500 seconds (25 minutes).

This commands configures a global timeout value for dynamic ARP entries.

Syntax

[no] ip arp timeout {<*timeout value*>|**refresh}**

where:

Parameter	Function
timeout value	The time in seconds until an ARP entry expires. The *timeout value* is from 60 to 28800.
refresh	Enables refreshing the ARP table right after it expires. The timeout is not reset to its default value.

Using **no** before the command resets the setting to its default value.

Modes

- Global Configuration Mode
- Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **refresh** option.

Example

The following command configures ARP timeout to 1800 seconds (30 minutes):

```
Switch(config)# ip arp timeout 1800
```

Restrictions

The following command is available only in Global Configuration Mode:

- **ip arp timeout refresh**

ip as-path access-list

Creates or deletes a Border Gateway Protocol (BGP) autonomous system (AS) access list.

Syntax

[no] ip as-path access-list *<ACL name>* **{deny|permit}** *<regular expression>*

where:

Parameter	Function
ACL name	The name of the BGP Access Control List (ACL).
deny	Enables the rejection of packets.
permit	Enables the forwarding of packets.
regular expression	A regular-expression to match the BGP AS paths.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command forwards packets from networks belonging to AS 340:

```
Switch(config)# ip as-path access-list as-acl-3 permit ^340$
```

ip community-list expanded

Adds or removes an expanded entry to or from the specified Border Gateway Protocol (BGP) community list.

Syntax

[no] ip community-list expanded *<community list name>* **{deny| permit}** *<regular expression>*

where:

Parameter	Function
community list name	The name of the community list.
deny	Rejects routes that match the specified community list.
permit	Accepts routes that match the specified community list.
regular expression	A regular expression specifying a pattern to match against an input string.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds an expanded community list entry that denies routes from network 28 to autonomous system (AS) 3000:

```
Switch(config)# ip community-list expanded exp-list-28 deny 3000:28
```

ip community-list standard

Adds or removes a standard entry to or from the specified Border Gateway Protocol (BGP) community list.

Syntax

[no] ip community-list standard *<community list name>* **{deny| permit} {[** *<community number>* **] [internet] [local-AS] [no-advertise] [no-export]}**

where:

Parameter	Function
community list name	The name of the community list.
deny	Rejects routes that match the specified community list.
permit	Accepts routes that match the specified community list.
community number	Rejects or accepts routes based on their community number. The format for the community number is *AA:NN* (autonomous system number:community number).
internet	Rejects or accepts only routes that are part of the well-known internet community.
local-AS	Rejects or accepts only routes not advertised outside the local autonomous system (AS).
no-advertise	Rejects or accepts only routes not advertised to any peers (internal or external).
no-export	Rejects or accepts only routes only advertised to peers in the same AS.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds a standard community list entry that accepts routes only not advertised outside the local AS:

```
Switch(config)# ip community-list standard clist-local permit local-AS
```

ip dhcp relay

Globally enables or disables IPv4 Dynamic Host Configuration Protocol (DHCPv4) service.

Syntax

[no] ip dhcp relay [information option]

where:

Parameter	Function
information option	Enables or disables DHCPv4 option 82, which inserts DHCP relay agent information in BOOTREQUEST messages forwarded to a DHCP server. By default, this option is disabled.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command globally enables DHCPv4:

```
Switch(config)# ip dhcp relay
```

ip dhcp snooping

Globally enables or disables Dynamic Host Configuration Protocol (DHCP) Snooping on the switch.

By default, DHCP Snooping is globally disabled on the switch.

Syntax

[no] ip dhcp snooping

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables DHCP Snooping on the switch:

```
Switch(config)# ip dhcp snooping
```

ip dhcp snooping binding

Adds an entry to the Dynamic Host Configuration Protocol (DHCP) Snooping binding table.

Syntax

ip dhcp snooping binding *<MAC address>* **vlan** *<VLAN ID>* *<IPv4 address>*
interface ethernet *<chassis number/port number>* **expiry** *<lease time>*

where:

Parameter	Description
MAC address	Configures the MAC address of the DHCP Snooping binding entry. The *MAC address* can be written in one of the following formats: ● *X.X.X* ● *XX-XX-XX-XX-XX-XX* ● *XX:XX:XX:XX:XX:XX* ● *XXXX.XXXX.XXXX*
vlan *VLAN ID*	Configures the VLAN of the DHCP Snooping binding entry. The *VLAN ID* is from 1 to 4093.
IPv4 address	Configures the IP address of the DHCP Snooping binding entry.
interface ethernet *chassis number/port number*	Configures the ethernet port of the DHCP Snooping binding entry. The *chassis number* is 1 and the *port number* depends on the switch type.
expiry *lease time*	Configures the lease time of the DHCP Snooping entry. The *lease time* is an integer from 1 to 4294967295 seconds.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command adds an entry to the DHCP Snooping binding table:

```
Switch(config)# ip dhcp snooping binding 00:0a:95:9d:68:16 vlan 138
10.57.144.208 interface ethernet 1/12 expiry 604800
```

no ip dhcp snooping binding

Deletes an entry from the Dynamic Host Configuration Protocol (DHCP) Snooping binding table.

Syntax

`no ip dhcp snooping binding {`*<MAC address>***`|all [interface ethernet`** *<chassis number/port number>***`|vlan`** *<VLAN ID>***`]}`**

where:

Parameter	Description
MAC address	Deletes an entry from the DHCP Snooping binding table based on its MAC address. The *MAC address* can be written in one of the following formats: ● *X.X.X* ● *XX-XX-XX-XX-XX-XX* ● *XX:XX:XX:XX:XX:XX* ● *XXXX.XXXX.XXXX*
all	Deletes all entries from the DHCP Snooping binding table.
interface ethernet *chassis number/port number*	Deletes all entries from the DHCP Snooping table that are associated with the specified ethernet port. The *chassis* and *port numbers* depend on the switch type.
vlan *VLAN ID*	Deletes all entries from the DHCP Snooping table that are associated with the specified VLAN. The *VLAN ID* is an integer from 1 to 4093.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command deletes an entry from the DHCP Snooping binding table based on its MAC address:

```
Switch(config)# no ip dhcp snooping binding 00:0a:95:9d:68:16
```

ip dhcp snooping information option

Enables or disables Dynamic Host Configuration Protocol (DHCP) Snooping option 82. This provides additional security when DHCP is used to allocate network addresses by enabling the switch to act as a DHCP relay agent to prevent DHCP client requests from untrusted sources. This command configures the switch to add option 82 information to DHCP requests from clients before forwarding the requests to the DHCP server.

By default, DHCP Snooping option 82 is disabled.

Syntax

[no] ip dhcp snooping information option

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables DHCP Snooping option 82:

```
Switch(config)# ip dhcp snooping information option
```

ip dhcp snooping vlan

Enables or disables Dynamic Host Configuration Protocol (DHCP) Snooping on the specified VLAN.

By default, DHCP Snooping is disabled on all VLANs.

Note: DHCP Snooping is enabled on a VLAN only if it is also enabled globally on the switch.

Syntax

[no] ip dhcp snooping vlan *<VLAN ID>*

where:

Parameter	Description
VLAN ID	Configures DHCP Snooping on the specified VLAN. The *VLAN ID* is an integer from 1 to 4093.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables DHCP Snooping on VLAN 138:

```
Switch(config)# ip dhcp snooping vlan 138
```

ip domain-lookup

Enables or disables Domain Name Service (DNS).

Syntax

[no] ip domain-lookup

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables DNS on the switch:

```
Switch(config)# ip domain-lookup
```

ip domain-list

Adds a domain to the list used by the Domain Name Service (DNS) client.

Syntax

ip domain-list *<domain name>* **vrf {default|management}**

where:

Parameter	Description
domain name	The DNS domain name. The *domain name* can be up to 64 characters in length.
vrf default	Adds a DNS domain name using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Adds a DNS domain name using the management VRF instance.

To delete a DNS domain nam from the list, use the following command:

no ip domain-list *<domain name>* **vrf {default|management}**

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command adds a DNS domain name:

```
Switch(config)# ip domain-list example.com vrf default
```

Restrictions

Only up to six DNS domains can be configured on the switch.

ip domain-name

Configures the Domain Name Service (DNS) default domain name.

Syntax

[no] ip domain-name *<domain name>* **vrf {default|management}**

where:

Parameter	Description
domain name	The DNS default domain name. The *domain name* can be up to 64 characters in length.
vrf default	Configures the DNS default domain name using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Configures the DNS default domain name using the management VRF instance.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command configures the DNS default domain name:

```
Switch(config)# ip domain-name example.com vrf management
```

ip ecmp weight

Configures weighted ECMP routes.

Syntax

`ip ecmp weight [interface {`<*IF name*>**`|ethernet`** <*slot/chassis*>**`|`**
`port-channel` <*PA number*>**`} |`** <*IP address*> **`]`** <*weight*>

`[no] ip ecmp weight enable`

where:

Parameter	Description
enable	Enables the ECMP weighted routes feature.
weight	The ECMP weight value; an integer from 1?]4.
IF name	Interface name; a string.
slot/chassis	The ethernet slot and chassis numbers.
PA number	The port aggregation number; an integer from 1-4096.
IP address	The IPv4 or IPv6 address for the next hop.

Modes

- Privileged EXEC Mode
- Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables weighted ECMP routes:

```
Switch(config)# ip ecmp weight enable
```

Restrictions

The following command is available only in Global Configuration Mode:

- **`[no] ip ecmp weight enable`**

ip extcommunity-list expanded

Adds or removes an expanded entry to or from the specified extended Border Gateway Protocol (BGP) community list.

Syntax

[no] ip extcommunity-list expanded *<extended community list name>* **{deny|permit}** *<regular expression>*

where:

Parameter	Function
extended community list name	The name of the extended community list.
deny	Rejects routes that match the specified extended community list.
permit	Accepts routes that match the specified extended community list.
regular expression	A regular expression specifying a pattern to match against an input string.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds an expanded entry to an extended community list that denies routes from network 28 to autonomous system (AS) 3000:

```
Switch(config)# ip extcommunity-list expanded extlist-28 deny 3000:28
```

ip extcommunity-list standard

Adds or removes a standard entry to or from the specified extended Border Gateway Protocol (BGP) community list.

Syntax

[no] ip extcommunity-list standard *<extended community list name>* **{deny|permit} {{rt|soo}[**<community number>**]}**

where:

Parameter	Function
community list name	The name of the community list.
deny	Rejects routes that match the specified community list.
permit	Accepts routes that match the specified community list.
community number	Rejects or accepts routes based on their community number. The format for the community number is *AA:NN* (autonomous system number:community number).
rt	Rejects or accepts only routes based on their route target.
soo	Rejects or accepts only routes based on their source of origin.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds a standard entry to an extended community list that accepts only routes with the community number 32500:34:

```
Switch(config)# ip extcommunity-list standard ext-32500 permit rt
32500:34
```

ip forwarding

Enables or disables the forwarding of IPv4 packets.

Syntax

`[no] ip forwarding`

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the forwarding of IPv4 packets:

```
Switch(config)# ip forwarding
```

ip host

Assigns a hostname to an IP address.

Syntax

[no] ip host *<hostname>* *<IP address>* **[**<IP address>**] vrf {default|**
|management}

where:

Parameter	Description
hostname	The hostname to associate with the IP address. The *hostname* can be up to 64 characters in length.
IP address	The IP address associated with the specified hostname.
vrf default	Associates the hostname and the IP address using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Associates the hostname and the IP address using the management VRF instance.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command assigns a hostname to an IP address:

```
Switch(config)# ip host HostExample 10.158.55.69 vrf default
```

Restrictions

Only up to 100 hostname to IP address mapping can be configured on the switch.

ip igmp snooping

Globally enables or disables Internet Group Management Protocol (IGMP) snooping.

By default, IGMP Snooping is enabled.

Syntax

[no] ip igmp snooping [report-forwarding-rate *<rate value>***|**
report-suppression|static-group max-limit *<max value>***|tcn]**

where:

Parameter	Function
report-forwarding-rate *rate value*	Configures the rate the switch uses to send IGMP reports to the multicast router. The *rate value* is from 3000 to 20000. The default value is 6000 packets per second.
report-suppression	When enabled, the snooping switch only sends the first report for a group to the multicast routers. Subsequent reports for the same group are not forwarded to the multicast router. When disabled, all reports are forwarded to multicast routers. This report suppression is applied only for IGMP v1 and v2 reports. By default, report suppression is enabled.
static-group max-limit *max value*	Configures the maximum number of static IGMP groups allowed on the switch. The *max value* is from 0 to 128. The default value is 0.
tcn	Enables or disable the GQ packet transmission when a Topology Change Notification (TCN) is received.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added **report-forwarding-rate** and **static-group max-limit** options.

Example

The following command globally enables IGMP Snooping:

```
Switch(config)# ip igmp snooping
```

ip load-sharing

Configures the unicast Forwarding Information Base (FIB) load-sharing algorithm for data traffic.

Using the **no** form of this commands reset the load-sharing algorithm to its default configuration.

The default setting is to use both source and destination IP addresses and ports.

Syntax

[no] ip load-sharing {destination-ip|destination-port|
source-dest-ip|source-dest-port|source-ip|source-port}
[universal-id *<random seed>***]**

where:

Parameter	Function
destination-ip	Uses destination IP address for load-sharing.
destination-port	Uses destination port address for load-sharing.
source-dest-ip	Uses both destination and source IP addresses for load-sharing.
source-dest-port	Uses both destination and source ports for load-sharing.
source-ip	Uses source IP address for load-sharing.
source-port	Uses source port for load-sharing.
universal-id *random seed*	Uses the specified value to randomize hash functions for load-sharing. The *random seed* is from 1 to 4294967295. The default value is 1431655765.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the load-sharing algorithm to use only the destination port and IP address and a random seed of 13445000:

```
Switch(config)# ip load-sharing destination-ip destination-port
universal-id 13445000
```

ip name-server

Configures a remote DNS server on the switch.

Syntax

[no] ip name-server *<IP address>* **[***<IP address>* **[***<IP address>***]] vrf {default|managemet}**

where:

Parameter	Description
IP address	The IP address of the remote DNS server.
vrf default	Configures the DNS server through the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Configures the DNS server through the management VRF instance.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command configures two remote DNS servers:

```
Switch(config)# ip name-server 10.247.8.96 10.247.96.32 vrf default
```

Restrictions

Only up to three DNS remote servers can be configured on the switch.

ip prefix-list

Adds or removes an IPv4 prefix list used to filter routes.

Syntax

[no] ip prefix-list *<prefix list name>* **{description** *<description>*|
[seq *<sequence number>*] **{deny|permit} {**<prefix> **[eq** *<prefix length>*|**ge**
<prefix length> **[le** *<prefix length>*]|**le** *<prefix length>* **[ge** *<prefix length>*]]|
any}}

where:

Parameter	Function
prefix list name	The name of the prefix list.
description *description*	Provides a short description of the prefix list. The *description* can be up to 80 characters in length.
seq *sequence number*	Specifies the sequence number of the prefix list entry. The *sequence number* is from 1 to 4294967295.
deny	Rejects the matching routes.
permit	Forwards the matching routes.
prefix	Filters routes that match the specified prefix. The *prefix* is written as: ● *IPv4 network address/network mask length*
eq	Filters routes that match an exact prefix length.
ge	Filters routes that have a prefix length greater than the specified value.
le	Filters routes that have a prefix length smaller than the specified value.
prefix length	The *prefix length* is from 1 to 32.
any	Filters routes based on any prefix match.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds an IPv4 prefix list called 'pref-list-35' that forwards BGP routes that match IPv4 address 35.0.0.0 with network mask length 8:

```
Switch(config)# ip prefix-list pref-list-35 permit 35.0.0.0/8
```

ip prefix-list sequence-number

Enables or disables the creation of sequence numbers for IPv4 prefix list entries.

Syntax

[no] ip prefix-list sequence-number

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the creation of sequence numbers for IPv4 prefix list entries:

```
Switch(config)# ip prefix-list sequence-number
```

ip route

Adds or removes static IPv4 routes.

Syntax

[no] ip route *<destination prefix>* **[***<interface name>***|ethernet** *<chassis number>***/***port number>***|mgmt** *<management interface>***|null** *<null interface>***|vlan** *<VLAN number>***]** *<gateway address>* **[***<distance>***] [description** *<description>***]** **[tag** *<tag number>***]**

where:

Parameter	Function
destination prefix	The destination prefix of the static route. The destination prefix can written as: ● *IPv4 prefix/network mask* ● *IPv4 address/network mask length*
interface name	Creates a static route on the named interface.
ethernet *chassis number/port number*	Creates a static route on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
mgmt *management interface*	Creates a static route on the specified management interface. The *management interface* is 0.
null *null interface*	Creates a static route on the specified null interface. The *null interface* is 0.
vlan *VLAN number*	Creates a static route on the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
gateway address	The IPv4 address of the next hop that can be used to reach the specified destination prefix.
distance	The administrative distance of the route. The *distance* is from 1 to 255. The default value is 1.
description *description*	Adds a short description of the static route.
tag *tag number*	The tag value of the route that can be used to control redistribution via route maps. The *tag number* is from 0 to 4294967295.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds a static IPv4 route for prefix 10.0.0.0/8 with its next hop address 12.290.76.240:

```
Switch(config)# ip route 10.0.0.0/8 12.190.76.240
```

ip route static bfd

Enables or disables Bidirectional Forwarding Detection (BFD) for static IPv4 routes.

This option is disabled by default.

Syntax

[no] ip route static bfd {<*interface name*>**|ethernet** <*chassis number/port number*>**|mgmt** <*management interface*>**|vlan** <*VLAN number*>**} {**<*gateway address*>/<*IP destination prefix*>**}**

where:

Parameter	Function
interface name	Enables BFD on the named interface.
ethernet *chassis number/port number*	Enables BFD on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
mgmt *management interface*	Enables BFD on the specified management interface. The *management interface* is 0.
vlan *VLAN number*	Enables BFD on the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
gateway address	Enables BFD for routes with the specified gateway address.
IP destination prefix	Enables BFD for routes with the specified destination ip prefix.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables BFD on ethernet interface 1/7 for routes with gateway address 10.56.178.34:

```
Switch(config)# ip route static bfd ethernet 1/7 10.56.178.34
```

ip slp enable

Enables or disables Service Location Protocol (SLP).

This option is enabled by default.

Syntax

`[no] ip slp enable`

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables SLP:

```
Switch(config)# ip slp enable
```

ipv6 dhcp relay

Globally enables or disables IPv6 Dynamic Host Configuration Protocol (DHCPv6) service.

Syntax

[no] ipv6 dhcp relay

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command globally enables DHCPv6:

```
Switch(config)# ipv6 dhcp relay
```

ipv6 forwarding

Enables or disables the forwarding of IPv6 packets.

Syntax

[no] ipv6 forwarding

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the forwarding of IPv6 packets:

```
Switch(config)# ipv6 forwarding
```

ipv6 prefix-list

Adds or removes an IPv6 prefix list used to filter routes.

Syntax

[no] ipv6 prefix-list *<prefix list name>* **{description** *<description>***|**
[seq *<sequence number>***] {deny|permit} {***<prefix>* **[ge** *<prefix length>* **[le**
*<prefix length>***]|le** *<prefix length>* **[ge** *<prefix length>***]]|any}}**

where:

Parameter	Function
prefix list name	The name of the prefix list.
description *description*	Provides a short description of the prefix list. The *description* can be up to 80 characters in length.
seq *sequence number*	Specifies the sequence number of the prefix list entry. The *sequence number* is from 1 to 4294967295.
deny	Rejects the matching routes.
permit	Forwards the matching routes.
prefix	Filters routes that match the specified prefix. The *prefix* is written as: ● *IPv6 network address/network mask length*
ge	Filters routes that have a prefix length greater than the specified value.
le	Filters routes that have a prefix length smaller than the specified value.
prefix length	The *prefix length* is from 0 to 128.
any	Filters routes based on any prefix match.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds an IPv6 prefix list called 'pref-list-3ffe' that forwards BGP routes that match IPv6 address `3ffe::` with network mask length `16`:

```
Switch(config)# ipv6 prefix-list pref-list-3ffe permit 3ffe::/16
```

ipv6 prefix-list sequence-number

Enables or disables the creation of sequence numbers for IPv6 prefix list entries.

Syntax

[no] ipv6 prefix-list sequence-number

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the creation of sequence numbers for IPv6 prefix list entries:

```
Switch(config)# ipv6 prefix-list sequence-number
```

ipv6 route

Adds or removes static IPv6 routes.

Syntax

[no] ipv6 route *<destination prefix>* *<gateway address>* **[**<*interface name*>**|
ethernet** *<chassis number/port number>***|mgmt** *<management interface>***|vlan**
*<VLAN number>***] [**<*distance*>**]**

where:

Parameter	Function
destination prefix	The destination prefix of the static route. The destination prefix can written as: ● *IPv6 address/network mask length*
gateway address	The IPv6 address of the next hop that can be used to reach the specified destination prefix.
interface name	Creates a static route on the named interface.
ethernet *chassis number/port number*	Creates a static route on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
mgmt *management interface*	Creates a static route on the specified management interface. The *management interface* is 0.
vlan *VLAN number*	Creates a static route on the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
distance	The administrative distance of the route. The *distance* is from 1 to 255. The default value is 1.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds a static IPv6 route for prefix `3ffe:506::/32` with
its next hop address `389c:be45:78::c45:8156`:

```
Switch(config)# ipv6 route 3ffe:506::/32 389c:be45:78::c45:8156
```

ipv6 route static bfd

Enables or disables Bidirectional Forwarding Detection (BFD) for static IPv6 routes.

This option is disabled by default.

Syntax

[no] ipv6 route static bfd {<*interface name*>**|ethernet** <*chassis number***/** *port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**| port-channel** <*LAG number*>**|vlan** <*VLAN number*>**} [**<*gateway address*>*|*<*IP destination prefix*>**]**

where:

Parameter	Function
interface name	Enables BFD on the named interface.
`ethernet` *chassis number/port number*	Enables BFD on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`loopback` *loopback interface*	Enables BFD on the specified loopback interface. The *loopback interface* is from 0 to 7.
`mgmt` *management interface*	Enables BFD on the specified management interface. The *management interface* is 0.
`port-channel` *LAG number*	Enables BFD on the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`vlan` *VLAN number*	Enables BFD on the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
gateway address	Enables BFD for routes with the specified gateway address.
IP destination prefix	Enables BFD for routes with the specified destination ip prefix.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables BFD on ethernet interface 1/10 for routes with gateway address 832a:5821:b34a::187:14:

```
Switch(config)# ipv6 route static bfd ethernet 1/10
832a:5821:b34a::187:14
```

lacp system-priority

Configures the Link Aggregation Control Protocol (LACP) system priority of the switch.

By default, the LACP system priority has a value of 32768.

Syntax

[no] lacp system-priority *<LACP system priority>*

where:

Parameter	Function
LACP system priority	The *LACP system priority* range is from 1 to 65535.

The following command resets the LACP system priority to its default value:

no lacp system -priority

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a LACP system priority of 35000:

```
Switch(config)# lacp system-priority 35000
```

line

Enter Line Configuration Mode.

Syntax

[no] line {console *<console line>***|vty** *<VTY number>***}**

where:

Parameter	Function
console line	The console line number; default value is 0.
VTY number	The virtual terminal number; an integer from 0-63.

For more information on Line Configuration Mode commands, see Chapter 6, "Line Mode Commands."

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters Line Configuration Mode to configure virtual terminal 3:

```
Switch(config)# line vty 3
Switch(config-line)#
```

lldp fast-init enable

Enable or disable LLDP fast transmission initialization.

Syntax

[**no**] **lldp fast-init enable**

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables LLDP fast transmission initialization:

```
Switch(config)# lldp fast-init enable
```

lldp holdtime-multiplier

Hold time is the amount of time a receiving device holds the information before discarding it. Hold time is configured as a multiple of the message transmission interval, which is set by the **lldp timer** command.

This command configures the Link Layer Discovery Protocol (LLDP) hold time multiplier value.

Syntax

[**no**] **lldp holdtime-multiplier** *<multiplier value>*

where:

Parameter	Function
multiplier value	The multiplier value; an integer from 2-10. Default value is 4.

Using the **no** form of this command resets the LLDP hold time multiplier to its default value (4).

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures an LLDP hold time multiplier of 3:

```
Switch(config)# lldp holdtime-multiplier 3
```

Related Commands

Command	Description
lldp timer	Sets the message transmission interval.

lldp reinit

Configures the time delay before Link Layer Discovery Protocol (LLDP) re-initialization is attempted on an interface. The re-initialization delay allows the port LLDP information to stabilize before transmitting LLDP messages.

Using the **no** form of this command reset the re-initialization delay to its default value.

The default value is 2 seconds.

Syntax

[**no**] **lldp reinit** *<time delay>*

where:

Parameter	Function
time delay	The time delay in seconds before LLDP re-initialization is attempted on an interface. The *time delay* is from 1 to 10.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the LLDP re-initialization delay to 5 seconds:

```
Switch(config)# lldp reinit 5
```

lldp timer

Configures the time interval between Link Layer Discovery Protocol (LLDP) message transmissions.

Using the **no** form of this command resets the time interval between LLDP messages to its default value.

The default value is 30 seconds.

Syntax

[**no**] **lldp timer** *<time interval>*

where:

Parameter	Function
time interval	The rate at which the switch sends LLDP messages. The *time interval* is in seconds from 5 to 32768.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the switch to send LLDP messages every 20 seconds:

```
Switch(config)# lldp timer 20
```

Restrictions

The transmission interval must be at least four times the transmission delay interval, which is set by the **lldp transmit-delay** command.

lldp transmit-delay

Configures the Link Layer Discovery Protocol (LLDP) transmission delay interval, which represents the minimum time permitted between two successive LLDP transmissions on a port.

Using the **no** form of this command resets the LLDP transmission delay interval to its default value.

The default value is 2 seconds.

Syntax

[**no**] **lldp transmit-delay** *<time delay>*

where:

Parameter	Function
time delay	The minimum time in seconds a switch waits between two successive LLDP transmission on a port. The *time delay* is from 1 to 8192.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the LLDP transmission delay interval to 5 seconds:

```
Switch(config)# lldp transmit-delay 5
```

Restrictions

The transmission delay interval must be at least four times smaller than the transmission interval, which is set by the **lldp timer** command.

lldp trap-interval

Configures the Link Layer Discovery Protocol (LLDP) trap notification interval.

Using the **no** form of the command resets the LLDP trap notification to its default value.

The default value is 5 seconds.

Syntax

[**no**] **lldp trap-interval** *<time interval>*

where:

Parameter	Function
time interval	The minimum number of seconds between two successive LLDP trap notifications. The *time interval* is from 5 to 3600.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the LLDP trap notification interval to 10 seconds:

```
Switch(config)# lldp trap-interval 10
```

logging console

Enables the switch to log messages to the console session.

Syntax

[no] logging console [<*severity level*>**]**

where:

Parameter	Function
severity level	The severity level; an integer from 0-7 as follows: ● 0 - emergencies ● 1 - alerts ● 2 - critical ● 3 - errors ● 4 - warnings ● 5 - notifications ● 6 - informational ● 7 - debugging Only messages up to the specified severity level are logged. The default severity level is 2 (critical).

Using the **no** form of this command disables logging messages on the console. Logging is enabled by default.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the logging of messages to the console session with a severity level of 3:

```
Switch(config)# logging console 3
```

logging ip access-list

Configures the method through which ACL logs are generated.

Syntax

```
logging ip access-list cache {entries <number of entries>|
interval<interval value>|
threshold<threshold number>}
```

where:

Parameter	Function
entries *<number of entries>*	The maximum number of log entries cached in the software; an integer from 1-1000000. The default value is 8000.
interval*<interval value>*	The log update interval, in seconds; an integer from 5-3600. The default value is 300.
threshold*<threshold number>*	Number of log messages generated and sent after the initial match, in numbers of packets; an integer from 1-1000000. The default value is 8000.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables the switch to log messages to the IP session:

```
Switch(config)# logging ip access-list cache interval 10
```

logging level

Configures the logging level for each facility in the system. Each facility corresponds to an application, process, protocol, or module.

The default severity level varies based on facility. Each facility has its own default value independently of the other facilities. The user can determine the default severity level for a given facility using the following command: **show logging level** *<facility>*.

Syntax

[no] logging level {*<facility>***|all}** *<severity level>*

where:

Parameter	Function
facility	The name of the facility that will have its severity level changed. A facility is a keyword used to identify the application, process, protocol, or module that logs a message. The list of supported facilities is shown after this table.
all	Configures the severity level for all facilities.
severity level	Only messages up to the specified severity level will be logged. The *severity level* is from 0 to 7: • 0 - emergencies • 1 - alerts • 2 - critical • 3 - errors • 4 - warnings • 5 - notifications • 6 - informational • 7 - debugging

Using the **no** form of this command resets the severity level to the default value.

You can change the severity level of the following *facilities*:

- `aaa` - Authentication, Authorization and Accounting (AAA). The default severity level is 5.

- `acllog` - Access Control List (ACL). The default severity level is 6.

- `bfd` - Bidirectional Forwarding Detection (BFD). The default severity level is 6.

- `bgp` - Border Gateway Protocol (BGP). The default severity level is 5.

- `chassisd` - Chassis Daemon. The default severity level is 5.

- `clid` - Command Line Interface (CLI) Daemon. The default severity level is 5.

- `dhcp-snp` - Dynamic Host Configuration Protocol (DHCP) Snooping. The default severity level is 5.

- `ecp` - Edge Control Protocol (ECP). The default severity level is 6.
- `hostmib` - Host Management Information Base (MIB). The default severity level is 6.
- `hostp` - Host Protocols. The default severity level is 5.
- `hsc` - Hardware Switch Controller (HSC). The default severity level is 6.
- `hsl` - Hardware Services Layer (HSL). The default severity level is 3.
- `imi` - Integrated Management Interface (IMI). The default severity level is 6.
- `imish` - Integrated Management Interface Shell (IMISH). The default severity level is 6.
- `khsl` - Kernel Hardware Services Layer (KHSL) module. The default severity level is 6.
- `l2mrib` - Layer 2 Multicast Routing Information Base (MRIB). The default severity level is 5.
- `lacp` - Link Aggregation Control Protocol (LACP). The default severity level is 5.
- `lldp` - Link Layer Discovery Protocol (LLDP). The default severity level is 5.
- `memmon` - Memory Monitor. The default severity level is 6.
- `ndd` - Neighbor Discovery Daemon (NDD). The default severity level is 6.
- `nlog` - Logging Control Daemon (NLOG). The default severity level is 6.
- `npa` - Network Policy Agent (NPA). The default severity level is 6.
- `nsm` - Network Service Module (NSM). The default severity level is 5.
- `ntp` - Network Time Protocol (NTP). The default severity level is 5.
- `nwv` - Network Virtualization (NWV). The default severity level is 6.
- `onm` - Open Network Management (ONM). The default severity level is 5.
- `ospf` - Open Shortest Path First (OSPF). The default severity level is 5.
- `ovsdb` - Open vSwitch Database Management Protocol (OVSDB). The default severity level is 6.
- `pam` - Linux Pluggable Authentication Modules (PAM). The default severity level is 6.
- `pki` - Public Key Infratructure (PKI). The default severity level is 5.
- `platform-mgr` - Platform Manager. The default severity level is 6.
- `pubsub` - Publisher/Subscriber Inter Process Communication Module. The default severity level is 6.
- `pyrun` - Python Runtime Environment. The default severity level is 6.
- `pysched` - Python Scheduler. The default severity level is 6.
- `rest` - REpresentational State Transfer (REST). The default severity level is 5.
- `rib` - Routing Information Base (RIB). The default severity level is 6.
- `service-mgr` - Service Manager. The default severity level is 5.
- `slp` - Service Location Protocol. The default severity level is 5.

- `smi-ac-l2mrib` - Simple Management Interface (SMI) API Client (AC) Layer 2 Multicast Routing Information Base (MRIB). The default severity level is 5.

- `smi-ac-lacp` - SMI AC Link Aggregation Control Protocol (LACP). The default severity level is 5.

- `smi-ac-mstp` - SMI AC Multiple Spanning Tree Protocol (MSTP). The default severity level is 5.

- `smi-ac-ndd` - SMI AC Neighbor Discovery Daemon (NDD). The default severity level is 5.

- `smi-ac-nsm` - SMI AC Network Service Module (NSM). The default severity level is 5.

- `smi-ac-onm` - SMI AC Open Network Management (ONM). The default severity level is 5.

- `smi-ac-rib` - SMI AC Routing Information Base (RIB). The default severity level is 5.

- `smi-ac-telemetry` - SMI AC Telemetry service. The default severity level is 5.

- `smi-ac-vrrp` - SMI AC Virtual Router Redundancy Protocol (VRRP). The default severity level is 5.

- `snmp` - Simple Network Management Protocol (SNMP). The default severity level is 5.

- `ssh` - Secure Shell (SSH). The default severity level is 5.

- `stp` - Spanning Tree Protocol (STP). The default severity level is 5.

- `syslog` - System Log Host Protocol. The default severity level is 5.

- `sysmgmt` - System Management Host Protocol. The default severity level is 5.

- `sysmgr` - System Manager. The default severity level is 5.

- `tacacs` - Terminal Access Controller Access-Control System Plus (TACACS+). The default severity level is 5.

- `telemetry` - Telemetry service. The default severity level is 5.

- `telnet` - Telnet Control Host Protocol. The default severity level is 5.

- `um` - User Management. The default severity level is 5.

- `vlag` - Virtual Link Aggregation Group (VLAG). The default severity level is 6.

- `vlan` - Virtual Local Area Network (VLAN). The default severity level is 5.

- `vrrp` - Virtual Router Redundancy Protocol (VRRP). The default severity level is 6.

- `ztp` - Zero Touch Provisioning. The default severity level is 6.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a severity level of 3 for the VLAN facility:

```
Switch(config)# logging level vlan 3
```

logging library

Configures the logging level for each system library and application process facility in the system. A system library facility is shared among multiple application process facilities in the system.

The default severity level varies based on the system library facility. Each system library facility has its own default value independently of the other libraries. The user can determine the default severity level for a given system library facility using the following command: **show logging library** *<system library>*.

Syntax

```
[no] logging library [hsl-nos-ipcc|hsl-nos-ipcs|lli|log|
|mcast|sal-pdp|secureimg|sysinfo] facility {<facility>|all}
<severity level>
```

where:

Parameter	Function
hsl-nos-ipcc	Configures the HSL Inter-Process-Communication Client library. The default security level is 3.
hsl-nos-ipcs	Configures the HSL Inter-Process-Communication Server library. The default security level is 3.
lli	Configures the low level drivers interface library. The default security level is 5.
log	Configures the log logging library. The default security level is 6.
mcast	Configures the multicast logging library. The default security level is 5.
sal-pdp	Configures the SDK Abstraction Layer (SAL) logging library. The default security level is 5.
secureimg	Configures the secure image logging library. The default security level is 6.
sysinfo	Configures the system information library. The default security level is 5.
facility	Configures the severity level of a certain application process facility.
facility	The name of the application process facility that will have its severity level changed for the selected system library facility. The list of supported application process facilities is shown below.

Parameter	Function
all	Configures the severity level for all application process facilities using a given system library facility.
severity level	Only messages up to the specified severity level will be logged. The *severity level* is from 0 to 7: ● 0 - emergencies ● 1 - alerts ● 2 - critical ● 3 - errors ● 4 - warnings ● 5 - notifications ● 6 - informational ● 7 - debugging

Using the **no** form of this command resets the severity level to the default value.

You can change the severity level of the following *facilities*:

● `bfd` - Bidirectional Forwarding Detection (BFD)

● `bgp` - Border Gateway Protocol (BGP)

● `chassisd` - Chassis Daemon

● `clid` - Command Line Interface (CLI) Daemon

● `dhcp-snp` - Dynamic Host Configuration Protocol (DHCP) Snooping

● `ecp` - Edge Control Protocol (ECP)

● `hostmib` - Host Management Information Base (MIB)

● `hostp` - Host Protocols

● `hsc` - Hardware Switch Controller (HSC)

● `hsl` - Hardware Services Layer (HSL)

● `imi` - Integrated Management Interface (IMI)

● `imish` - Integrated Management Interface Shell (IMISH)

● `l2mrib` - Layer 2 Multicast Routing Information Base (MRIB)

● `lacp` - Link Aggregation Control Protocol (LACP)

● `memmon` - Memory Monitor

● `ndd` - Neighbor Discovery Daemon (NDD)

● `nlog` - Logging Control Daemon

● `npa` - Network Policy Agent (NPA)

● `nsm` - Network Service Module (NSM)

● `nwv` - Network Virtualization (NWV)

● `onm` - Open Network Management (ONM)

● `ospf` - Open Shortest Path First (OSPF)

- **ovsdb** - Open vSwitch Database Management Protocol (OVSDB)
- **pam** - Linux Pluggable Authentication Modules (PAM)
- **platform-mgr** - Platform Manager
- **pubsub** - Publisher/Subscriber Inter Process Communication Module
- **pyrun** - Python Runtime Environment
- **pysched** - Python Scheduler
- **rest** - REpresentational State Transfer (REST)
- **rib** - Routing Information Base (RIB)
- **service-mgr** - Service Manager
- **slp** -Service Location Protocol
- **stp** - Spanning Tree Protocol (STP)
- **sysmgr** - System Manager
- **telemetry** - Telemetry service
- **vlag** - Virtual Link Aggregation Group (VLAG)
- **vrrp** - Virtual Router Redundancy Protocol (VRRP)
- **ztp** - Zero Touch Provisioning

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a severity level of 3 for the system library `lli` when operating as part of the application process OSPF:

```
Switch(config)# logging library lli facility ospf 3
```

logging logfile

Enables or disables the logging of messages to a log file. The log file will be created in persistent memory under the /cfg/log/customer/ directory.

Using the no form of this command will only disable the logging of messages to the log file. However, it will not delete the log file or the logged messages.

The default severity level is 6 (informational).

Syntax

[no] logging logfile *<log file name>* *<severity level>* **[size** *<file size>***]**

where:

Parameter	Function
log file name	The name of the log file. The *log file name* can be up to 32 characters in length. The allowed characters are: ● letters ● numbers ● _
severity level	Only messages up to the specified severity level will be logged. The *severity level* is from 0 to 7: ● 0 - emergencies ● 1 - alerts ● 2 - critical ● 3 - errors ● 4 - warnings ● 5 - notifications ● 6 - informational ● 7 - debugging
size *file size*	The maximum size in bytes of the log file. The file size is from 4,096 bytes (4 KB) to 10,485,760 bytes (10 MB).

To delete the logged messages from the log file use the following command:

clear logging logfile

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the logging of messages to the log file named 'log_file_sev_2'. In order to be saved to the file, the logged messages must have a severity level of 2 (critical) or greater. The size of log file is restricted to 3 MB:

```
Switch(config)# logging logfile log_file_sev_2 2 size 3145728
```

Restrictions

The default log file size is 10,485,760 bytes (10 MB).

logging monitor

Enables or disables the switch to log messages to the monitor sessions (Telnet and Secure Shell (SSH)).

The default settings is enabled with a severity level of 5 (notifications).

Syntax

[no] logging monitor [<*severity level*>]

where:

Parameter	Function
severity level	Only messages up to the specified severity level will be logged. The *severity level* is from 0 to 7: ● 0 - emergencies ● 1 - alerts ● 2 - critical ● 3 - errors ● 4 - warnings ● 5 - notifications ● 6 - informational ● 7 - debugging

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the logging of messages to the monitor sessions with a severity level of 3 (errors):

```
Switch(config)# logging monitor 3
```

logging rate-limit

Configures the rate limit of logged messages (maximum number of messages that can be logged per time interval in seconds) for three supported contexts:

- for the entire system
- for each severity level
- for each facility

The three rate limit contexts listed previously are independent of each other. (e.g. if we disable rate limit for the system, the rate limit parameters related to the severity levels and facilities are still applicable).

Using the no form of this command disables rate limiting for the specified context. To reset the rate limit parameters to their default values use the default keywords associated to the number of messages or time interval parameters.

Rate limit has different default values for the distinct contexts:

- for the system: 512 messages every 5 seconds
- for severity levels: 1024 messages every 10 seconds
- for facilities: 512 messages every 10 seconds

Syntax

logging rate-limit num {<*number of messages*>**|default} interval {**<*time interval*>**|default} {facility {**<*facility*>**|all}|level** <*severity level*>**|system}**

no logging rate-limit {facility {<*facility*>**|all}|level** <*severity level*>**|system}**

where:

Parameter	Function
num	Configures the maximum number of messages that can be logged within the configured interval.
number of messages	The *number of messages* is from 1 to 4096.
default	This keyword will instruct the system to set parameter being configured to its default value.
interval	Configures the time interval.
time interval	The *time interval* is in seconds from 1 to 600.
facility *facility*	Configures the rate limit of logged messages for the specified facility. A facility is a keyword used to identify the application, process, protocol, or module that logs a message. The list of supported facilities is shown after this table.

Parameter	Function
level *severity level*	Only messages up to the specified severity level will be logged. The *severity level* is from 0 to 7: ● 0 - emergencies ● 1 - alerts ● 2 - critical ● 3 - errors ● 4 - warnings ● 5 - notifications ● 6 - informational ● 7 - debugging
system	Configures the rate limit of logged messages for the system.

You can change the rate limit of the following *facilities*:

● **aaa** - Authentication, Authorization and Accounting (AAA)

● **all** - All facilities

● **bfd** - Bidirectional Forwarding Detection (BFD)

● **bgp** - Border Gateway Protocol (BGP)

● **chassisd** - Chassis Daemon

● **clid** - Command Line Interface (CLI) Daemon

● **dhcp-snp** - Dynamic Host Configuration Protocol (DHCP) Snooping

● **ecp** - Edge Control Protocol (ECP)

● **hostmib** - Host Management Information Base (MIB)

● **hostp** - Host Protocols

● **hsc** - Hardware Switch Controller (HSC)

● **hsl** - Hardware Services Layer (HSL)

● **imi** - Integrated Management Interface (IMI)

● **imish** - Integrated Management Interface Shell (IMISH)

● **khsl** - Kernel Hardware Services Layer (KHSL) module

● **l2mrib** - Layer 2 Multicast Routing Information Base (MRIB)

● **lacp** - Link Aggregation Control Protocol (LACP)

● **lldp** - Link Layer Discovery Protocol (LLDP)

● **memmon** - Memory Monitor

● **ndd** - Neighbor Discovery Daemon (NDD)

● **nlog** - Logging Control Daemon (NLOG)

● **npa** - Network Policy Agent (NPA)

● **nsm** - Network Service Module (NSM)

- `ntp` - Network Time Protocol (NTP)
- `nwv` - Network Virtualization (NWV)
- `onm` - Open Network Management (ONM)
- `ospf` - Open Shortest Path First (OSPF)
- `ovsdb` - Open vSwitch Database Management Protocol (OVSDB)
- `pam` - Linux Pluggable Authentication Modules (PAM).
- `pki` - Public Key Infratructure (PKI).
- `platform-mgr` - Platform Manager
- `pubsub` - Publisher/Subscriber Inter Process Communication Module
- `pyrun` - Python Runtime Environment
- `pysched` - Python Scheduler
- `rest` - REpresentational State Transfer (REST)
- `rib` - Routing Information Base (RIB)
- `service-mgr` - Service Manager
- `slp` -Service Location Protocol
- `smi-ac-l2mrib` - Simple Management Interface (SMI) API Client (AC) Layer 2 Multicast Routing Information Base (MRIB)
- `smi-ac-lacp` - SMI AC Link Aggregation Control Protocol (LACP)
- `smi-ac-mstp` - SMI AC Multiple Spanning Tree Protocol (MSTP)
- `smi-ac-ndd` - SMI AC Neighbor Discovery Daemon (NDD)
- `smi-ac-nsm` - SMI AC Network Service Module (NSM)
- `smi-ac-onm` - SMI AC Open Network Management (ONM)
- `smi-ac-rib` - SMI AC Routing Information Base (RIB)
- `smi-ac-vrrp` - SMI AC Virtual Router Redundancy Protocol (VRRP)
- `snmp` - Simple Network Management Protocol (SNMP)
- `ssh` - Secure Shell (SSH)
- `stp` - Spanning Tree Protocol (STP).
- `syslog` - System Log Host Protocol
- `sysmgmt` - System Management Host Protocol
- `sysmgr` - System Manager
- `tacacs` - Terminal Access Controller Access-Control System Plus (TACACS+)
- `telemetry` - Telemetry service.
- `telnet` - Telnet Control Host Protocol
- `um` - User Management
- `vlag` - Virtual Link Aggregation Group (VLAG)
- `vlan` - Virtual Local Area Network (VLAN)

- `vrrp` - Virtual Router Redundancy Protocol (VRRP)
- `ztp` - Zero Touch Provisioning

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command configures the rate-limit of the system to 300 messages every 10 seconds:

```
Switch(config)# logging rate-limit num 300 interval 10 system
```

The following command configures the rate-limit of the severity level 6 (informational) to 256 messages every 16 seconds:

```
Switch(config)# logging rate-limit num 256 interval 16 level 6
```

The following command configures the rate-limit of the facility bgp to 200 messages every 5 seconds:

```
Switch(config)# logging rate-limit num 200 interval 5 facility bgp
```

The following command configures the rate-limit of the system to the default values of 512 messages every 5 seconds:

```
Switch(config)# logging rate-limit num default interval default system
```

The following command disables the rate-limit for the severity level 3 (errors). If only this command is issued, the rate-limit parameters related to the system and all facilities are still applicable:

```
Switch(config)# no logging rate-limit level 3
```

The following command disables the rate-limit for all facilities. If only this command is issued, the rate-limit parameters related to the system and all severity levels are still applicable:

```
Switch(config)# no logging rate-limit facility all
```

logging server

Adds or removes a remote logging server at the specified address.

If not specified when adding a remote logging server, the default values for severity level is 7 (debugging) and outgoing facility local7.

Syntax

[no] logging server {<*server address*>**|**<*hostname*>**} [**<*severity level*>**] [vrf {data|management}] [facility** <*outgoing facility*>**]**

where:

Parameter	Function
server address	The IPv4 or IPv6 address of the remote server.
hostname	The hostname of the remote server.
severity level	Only messages up to the specified severity level will be logged. The *severity level* is from 0 to 7: ● 0 - emergencies ● 1 - alerts ● 2 - critical ● 3 - errors ● 4 - warnings ● 5 - notifications ● 6 - informational ● 7 - debugging
facility *outgoing facility*	Logs messages only for the specified outgoing facility. A facility is a keyword used to identify the source of the log messages when forwarding them to a remote server. Use one of the following: ● local0 ● local1 ● local2 ● local3 ● local4 ● local5 ● local6 ● local7 ● user
vrf data	Uses the data Virtual Routing and Forwarding (VRF) instance to communicate with the server.
vrf management	Uses the management VRF instance to communicate with the server.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added **vrf** option.
10.4	Added *hostname* option.

Example

The following command configures a remote logging server at an IPv4 address:

```
Switch(config)# logging server 10.240.34.178
```

logging throttle

Prevents consecutive logging of duplicate syslog messages.

By default, this feature is disabled.

Syntax

`[no] logging throttle`

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command prevents duplicate syslog messages logging:

```
Switch(config)# logging throttle
```

logging timestamp

Configures the unit used to show the time-stamp when logging messages.

Using the **no** form of the command resets the time-stamp unit to its default setting.

The default time-stamp unit is seconds.

Syntax

[no] logging timestamp {microseconds|milliseconds|seconds}

where:

Parameter	Function
microseconds	Configures logging messages to use microseconds as the timestamp units (1 microsecond = 10^{-6} seconds).
milliseconds	Configures logging messages to use milliseconds as the timestamp units (1 millisecond = 10^{-3} seconds).
seconds	Configures logging messages to use seconds as the timestamp unit.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures milliseconds as the time-stamp unit:

```
Switch(config)# logging timestamp milliseconds
```

mac-learn disable

When a packet with an unknown MAC source address is received, the switch saves the MAC address in its the Forwarding Database (FDB). This process is called MAC address learning.

The command globally disables MAC address learning. Any new MAC addresses will not be saved in the FDB.

Use the **no** form of this command to enable MAC address learning.

Note: We recommend you remove all dynamic MAC addresses from the FDB after disabling/enabling MAC learning.

Syntax

[no] mac-learn disable

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables MAC address learning:

```
Switch(config)# mac-learn disable
```

Related Commands

Command	Description
clear mac address-table	Removes all dynamic MAC addresses from the FDB.

mac access-list

Creates a MAC access control list and enters MAC ACL Configuration Mode.

Syntax

[**no**] **mac access-list** *<MAC ACL>*

where:

Parameter	Definition
MAC ACL	The name of the MAC access control list; a string up to 64 characters long.

Using **no** before the command removes the MAC ACL.

For information about MAC ACL Configuration mode commands, see Chapter 23, "MAC ACL Mode Commands.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates MAC ACL MyACL:

```
Switch(config)# mac access-list MyACL
Switch(config-mac-acl)#
```

mac address-table aging time

Enables an aging time for a MAC address table.

Syntax

[**no**] **mac address-table aging-time** *<seconds>*

where:

Parameter	Definition
aging-time *<seconds>*	Aging time in seconds; a number from 0 to 1000000. The default value is 1800 seconds.

Using **no** before the command resets the aging time to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures aging time for an address table:

```
Switch(config)# mac address-table aging-time 5
```

mac address-table static

Adds or removes static entries for the MAC address table.

Syntax

[no] mac address-table static *<MAC address>* **vlan** *<VLAN ID>*
interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}**

where:

Parameter	Definition
MAC address	MAC address in one of the following formats: ● *X.X.X* ● *XX-XX-XX-XX-XX-XX* ● *XX:XX:XX:XX:XX:XX* ● *XXXX.XXXX.XXXX*
vlan *<VLAN ID>*	Associates the MAC entry with the specified VLAN. The *VLAN ID* is an integer from 1 to 4093.
interface	Associates the MAC entry with an ethernet interface or Link Aggregation Group (LAG).
ethernet *chassis number/port number*	Associates the MAC entry with the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Associates the MAC entry with the specified LAG. The *LAG number* is an integer from 1 to 4096.

Using **no** before the command removes the static entry.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a static MAC entry for a port-channel:

```
Switch(config)# mac address-table static 0001.dcde.3b00 vlan 10 interface
port-channel 61
```

maint password

Enables or disables the use of a password to enable maintenance mode.

Syntax

maint password *<password>*

no maint password

where:

Parameter	Function
password	The password required to enable maintenance mode. The *password* can be up to 20 characters long.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures maint-cd as the encrypted password required to enable maintenance mode:

```
Switch(config)# maint password maint-cd
```

Related Commands

Command	Description
maint mode enable	Enables maintenance mode

maximum-paths

Configures the maximum number of Equal Cost Multiple Paths (ECMP) that can be installed in the Forwarding Information Base (FIB).

Using the **no** form of the command resets the maximum number of ECMP paths the its default value.

Syntax

[no] maximum-paths *<number of paths>*

where:

Parameter	Function
number of paths	The maximum number of ECMP paths; an integer from 1-32. The default value is 32.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the maximum number of ECMP paths to 12:

```
Switch(config)# maximum-paths 12
```

microburst-detection interval

Microbursts are short peaks in data traffic that manifest as a sudden increase in the number of data packets transmitted over a specific millisecond-level time frame, potentially overwhelming network buffers. Microburst detection allows users to analyze and mitigate microburst-related incidents, thus preventing network congestion.

Configures the time interval used by microburst detection to evaluate traffic burst.

Syntax

microburst-detection interval *<time interval>*

where:

Parameter	Function
time interval	The time period in milliseconds used to evaluate traffic burst; an integer from 5 to 5000. Default value is 5.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the microburst detection interval to 20 milliseconds:

```
Switch(config)# microburst-detection interval 20
```

monitor erspan origin ip-address

Configures the global origin IPv4 address of ethernet Encapsulated Remote Switched Port Analyzer (ERSPAN) sessions.

Using the **no** form of this command will remove the configured global origin IPv4 address.

Syntax

[**no**] **monitor erspan origin ip-address** *<IPv4 address>* **global**

where:

Parameter	Function
IPv4 address	The origin IPv4 address of ethernet ERSPAN sessions.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command the global origin address of ethernet ERSPAN sessions as 10.206.38.96:

```
Switch(config)# monitor erspan origin ip-address 10.206.38.96 global
```

monitor session

Adds a Switch Port Analyzer (SPAN) session. After the creation of a SPAN session, enters SPAN Session Configuration Mode.

Syntax

[**no**] **monitor session** *<session number>*

where:

Parameter	Function
session number	The SPAN session number. The *session number* is from 1 to 18.

Using no before the command removes the specified SPAN session.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds SPAN session 7:

```
Switch(config)# monitor session 7
```

monitor session shut

Configures the specified Switch Port Analyzer (SPAN) session as being shut down for monitoring.

Using the **no** form of the command configures the SPAN session as not being shut down for monitor.

Syntax

[**no**] **monitor session** {<*session number*>|**all**} **shut**

where:

Parameter	Function
session number	The SPAN session number. The *session number* is from 1 to 18.
all	Configures all SPAN sessions as being shut down.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures all SPAN sessions as being shut down:

```
Switch(config)# monitor session all shut
```

monitor session type

Specifies the Switch Port Analyzer (SPAN) session type.

Syntax

monitor session *<session number>* **type** {**erspan-destination**|
erspan-source|**local**}

where:

Parameter	Function
session number	The SPAN session number. The *session number* is from 1 to 18.
type erspan-destination	Specifies that the session is a Encapsulated Remote Switched Port Analyzer (ERSPAN) destination session.
type erspan-source	Specifies that the session is a Encapsulated Remote Switched Port Analyzer (ERSPAN) source session.
type local	Specifies that the session is a local session.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command assigns SPAN session 10 as a local session:

```
Switch(config)# monitor session 10 type local
```

no onie-install

Uninstalls the Open Network Install Environment (ONIE) image from the switch.

Note: This command is available only on the NE10032 and NE2572. The switch must be reloaded with Secure Boot disabled for the command to be run, otherwise an error message appears. For more details on Secure Boot, consult the *Lenovo Network Application Guide for Lenovo Cloud Network Operating System 10.7*.

Syntax

`no onie-install`

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command uninstalls the ONIE image from the switch:

```
Switch(config)# no onie-install
```

ntp authenticate

Enables the Network Time Protocol (NTP) authentication.

Syntax

[no] ntp authenticate

Using **no** before the command disables the authentication.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable NTP authentication:

```
Switch(config)# ntp authenticate
```

ntp authentication-key

Adds the authentication key.

Syntax

[no] authentication-key *<value>* **md5** *<string>*

where:

Parameter	Description
<value>	Authentication key number (a value from 1 to 65534).
md5	Authentication algorithm.
<string>	MD5 string.

Using **no** before the command removes the authentication key.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set the authentication key:

```
Switch(config)# ntp authentication-key 5 md5 test
```

ntp enable

Enables Network Time Protocol (NTP) feature. This feature allows you to synchronize the switch clock to a Network Time Protocol (NTP) server. NTP is enabled by default.

Syntax

[no] ntp enable

Using **no** before the command turns off the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable NTP:

```
Switch(config)# ntp enable
```

ntp peer

Configures an NTP peer.

Syntax

[no] ntp peer {<*IPv4 address*>**|**<*IPv6 address*>**|**<*hostname*>**} [key** <*key ID*>**]**
[maxpoll <*max-poll interval*>**] [minpoll** <*min-poll interval*>**] [prefer]**

where:

Parameter	Description
IPv4 address	The IPv4 address of the NTP peer.
IPv6 address	The IPv6 address of the NTP peer.
hostname	The hostname of the NTP peer.
key *key ID*	Specifies the key to be used when communicating with a peer. The key ID is a number from 1 to 65534.
maxpoll *max-poll interval*	Specifies the maximum poll interval to check the status of the configured NTP peer. The *max-poll interval* is from 4 to 16 seconds, with a default value of 6 seconds.
minpoll *min-poll interval*	Specifies the minimum poll interval to check the status of the configured NTP peer. The *min-poll interval* is from 4 to 16 seconds, with a default value of 4 seconds.
prefer	Specifies the given NTP peer as the preferred one.

Using **no** before the command removes an NTP peer.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.
10.5	Updated the documentation.

Example

The following shows how to set an NTP peer:

```
Switch(config)# ntp peer 10.144.19.105 key 18755 prefer
```

ntp server

Configures an NTP server.

Syntax

[no] ntp server {*<IPv4 address>***|***<IPv6 address>***|***<hostname>***} [key** *<key ID>***]**
[maxpoll *<max-poll interval>***] [minpoll** *<min-poll interval>***] [prefer]**

where:

Parameter	Description
IPv4 address	The IPv4 address of the NTP server.
IPv6 address	The IPv6 address of the NTP server.
hostname	The hostname of the NTP server.
key *key ID*	Specifies the key to be used when communicating with a server. The key ID is a number from 1 to 65534.
maxpoll *max-poll interval*	Specifies the maximum poll interval to check the status of the configured NTP server. The *max-poll interval* is from 4 to 16 seconds, with a default value of 6 seconds.
minpoll *min-poll interval*	Specifies the minimum poll interval to check the status of the configured NTP server. The *min-poll interval* is from 4 to 16 seconds, with a default value of 4 seconds.
prefer	Specifies the given NTP server as the preferred one.

Using **no** before the command removes an NTP server.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.
10.5	Updated the documentation.

Example

The following shows how to set an NTP server:

```
Switch(config)# ntp server 19.71.241.11 key 58466 minpoll 3 maxpoll 6
```

ntp trusted-key

Sets a trusted key.

Syntax

[no] ntp trusted-key *<number>*

where:

Parameter	Description
<number>	Trusted key value (a number from 1 to 65534).

Using **no** before the command removes a trusted key.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set a trusted key:

```
Switch(config)# ntp trusted-key 20
```

ntp use-vrf

Configures NTP VRF. NTP daemon (ntpd) will run in the given namespace.

Syntax

```
ntp use-vrf {default|management}
```

where:

Parameter	Description
`default`	Default VRF. For data interfaces, a default VRF with ID 0 is created and associated with default FIB. All data IP interfaces are attached to default VRF.
`management`	Management VRF. By default, a VRF with ID1 is created. This is the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure an NTP VRF:

```
Switch(config)# ntp use-vrf default
```

ovsdb pki

Binds a PKI profile for ovsdb to a specific VRF.

Syntax

ovsdb pki *<PKI profile name>* **vrf {***<instance name>***| default |management}**

where:

Parameter	Description
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.
vrf *instance name*	The name of the VRF instance.
vrf default	Default VRF.
vrf management	Management VRF.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to configure bind a PKI profile for ovsdb to a specific vrf:

```
Switch(config)# ovsdb pki ovsdb_mgmt vrf management
```

password history-checking

Enables or disables password tracking. Up to four passwords will be stored and checked for every user.

Syntax

[no] password history-checking

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to track password history:

```
Switch(config)# password history-checking
```

Related Commands

Command	Description
username	Modifies user settings.

pki

Creates a Public Key Infrastructure (PKI) profile. After command execution, you will enter PKI Configuration command mode.

Syntax

pki *<PKI profile name>*

where:

Parameter	Description
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.

The following command deletes the specified PKI profile:

no pki *<PKI profile name>*

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command creates a PKI profile called pkiProfile1:

```
Switch(config)# pki pkiProfile1
Switch(config-pki)#
```

policy-map type

Creates or modifies a control-plane, qos or queing policy-map.

Syntax

[no] policy-map type {control-plane *<policy-map name>***|qos**
*<policy-map name>***|queing}**

where:

Parameter	Description
control-plane	Control Plane Protection (CoPP) policy map type.
qos	Quality of Service (QoS) policy map type.
<policy-map name>	Policy map name.
queing	Queing policy map.

Using **no** before the command removes a specified policy map.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set a policy-map:

```
Switch(config)# policy-map type qos test
```

port-channel load-balance ethernet destination-ip

Enables or disables Link Aggregation Group (LAG) traffic balancing.

Syntax

```
[no] port-channel load-balance ethernet source-dest-ip|
source-dest-mac|source-dest-port|source-ip|source-mac}
source-port] [source-interface]
```

where:

Parameter	Function
source-dest-ip	Enables load distribution on both the destination and source IP addresses.
source-dest-mac	Enables load distribution on both the destination and source MAC addresses.
source-dest-port	Enables load distribution on both the destination and source port numbers.
source-ip	Enables load distribution on the source IP address.
source-mac	Enables load distribution on the source MAC address.
source-port	Enables load distribution on the source port number.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command was expanded.

Example

The following command enables load distribution on the destination MAC address and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet destination-mac
source-interface
```

port-channel load-balance ethernet destination-ip

Enables or disables Link Aggregation Group (LAG) traffic balancing on the destination IP address.

Syntax

```
[no] port-channel load-balance ethernet destination-ip
[source-interface]
```

where:

Parameter	Function
`destination-ip`	Enables load distribution on the destination IP address.
`source-interface`	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command was expanded.

Example

The following command enables load distribution on the destination IP address and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet destination-ip
source-interface
```

port-channel load-balance ethernet destination-mac

Enables or disables Link Aggregation Group (LAG) traffic balancing on the destination MAC.

Syntax

```
[no] port-channel load-balance ethernet destination-mac
[source-interface]
```

where:

Parameter	Function
destination-mac	Enables load distribution on the destination MAC address.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables load distribution on the destination MAC address and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet destination-mac
source-interface
```

port-channel load-balance ethernet destination-port

Enables or disables Link Aggregation Group (LAG) traffic balancing on the destination TCP or UDP port.

Syntax

[no] port-channel load-balance ethernet destination-port [source-interface]

where:

Parameter	Function
destination-port	Enables load distribution on the destination port number.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command was expanded.

Example

The following command enables load distribution on the destination TCP or UDP port and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet destination-port
source-interface
```

port-channel load-balance ethernet source-dest-ip

Enables or disables Link Aggregation Group (LAG) traffic balancing on the source and destination IP addresses.

Syntax

[no] port-channel load-balance ethernet source-dest-ip [source-interface]

where:

Parameter	Function
source-dest-ip	Enables load distribution on both the destination and source IP addresses.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command was expanded.

Example

The following command enables load distribution on the source and destination IP addresses and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet source-dest-ip
source-interface
```

port-channel load-balance ethernet source-dest-mac

Enables or disables Link Aggregation Group (LAG) traffic balancing for both the source and destination MAC addresses.

Syntax

[no] port-channel load-balance ethernet source-dest-mac [source-interface]

where:

Parameter	Function
source-dest-mac	Enables load distribution on both the destination and source MAC addresses.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command tree was expanded.

Example

The following command enables load distribution on the source and destination MAC addresses and the source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet source-dest-mac
source-interface
```

port-channel load-balance ethernet source-dest-port

Enables or disables Link Aggregation Group (LAG) traffic balancing on both the source and destination TCP or UDP ports.

Syntax

[no] port-channel load-balance ethernet source-dest-port [source-interface]

where:

Parameter	Function
source-dest-port	Enables load distribution on both the destination and source TCP and UDP ports.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command tree was expanded.

Example

The following command enables load distribution on the source and destination TCP or UDP ports and the source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet source-dest-port
source-interface
```

port-channel load-balance ethernet source-interface

Enables or disables Link Aggregation Group (LAG) traffic balancing on the source ethernet interface.

Syntax

```
[no] port-channel load-balance ethernet source-interface
[destination-ip|destination-mac|destination-port|
source-dest-ip|source-dest-mac|source-dest-port|source-ip|
source-mac|source-port]
```

where:

Parameter	Function
`source-interface`	Enables load distribution on the source ethernet interface.
`destination-ip`	(Optional) Enables load distribution on the destination TCP or UDP address.
`destination-mac`	(Optional) Enables load distribution on the destination MAC address.
`destination-port`	(Optional) Enables load distribution on the destination port.
`source-dest-ip`	(Optional) Enables load distribution on both the destination and source TCP or UDP addresses.
`source-dest-mac`	(Optional) Enables load distribution on both the destination and source MAC addresses.
`source-dest-port`	(Optional) Enables load distribution on both the destination and source ports.
`source-ip`	(Optional) Enables load distribution on the source IP address.
`source-mac`	(Optional) Enables load distribution on the source MAC address.
`source-port`	(Optional) Enables load distribution on the source port.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command tree was expanded.

Example

The following command enables load distribution on the source ethernet interface and destination MAC address:

```
Switch(config)# port-channel load-balance ethernet source-interface
destination-mac
```

port-channel load-balance ethernet source-ip

Enables or disables Link Aggregation Group (LAG) traffic balancing on the source TCP or UDP address.

Syntax

[no] port-channel load-balance ethernet source-ip [source-interface]

where:

Parameter	Function
source-ip	Enables load distribution on the source IP address.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command tree was expanded.

Example

The following command enables load distribution on the source TCP or UDP address and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet source-ip
source-interface
```

port-channel load-balance ethernet source-mac

Enables or disables Link Aggregation Group (LAG) traffic balancing on the source MAC address.

Syntax

```
[no] port-channel load-balance ethernet source-mac
[source-interface]
```

where:

Parameter	Function
source-mac	Enables load distribution on the source MAC address.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command tree was expanded.

Example

The following command enables load distribution on the source MAC address and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet source-mac
source-interface
```

port-channel load-balance ethernet source-port

Enables or disables Link Aggregation Group (LAG) traffic balancing.

Syntax

```
[no] port-channel load-balance ethernet source-port
[source-interface]
```

where:

Parameter	Function
source-port	Enables load distribution on the source TCP or UDP port.
source-interface	(Optional) Enables load distribution on the source ethernet interface.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command tree was expanded.

Example

The following command enables load distribution on the source TCP or UDP address and source ethernet interface:

```
Switch(config)# port-channel load-balance ethernet source-port
source-interface
```

qos statistics

Enables or disables Quality of Service (QoS) statistics.

Syntax

[**no**] **qos statistics**

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables QoS statistics:

```
Switch(config)# qos statistics
```

radius-server host

Configures a Remote Authentication Dial-In User Service (RADIUS) server.

Syntax

[no] radius-server host {<*IP address*>**|**<*hostname*>**} [key [0|7]**
<*authentication key*>**] [auth-port** <*port number*>**] [acc-port** <*port number*>**]**
[timeout <*timeout interval*>**] [retransmit** <*number of retries*>**]**

where:

Parameter	Description
IP address	The IP address of the RADIUS server.
hostname	The hostname of the RADIUS server.
key	Configures an authentication key to be used when connecting to the RADIUS server.
0	Specifies that the authentication key will not be encrypted. This is the default encryption method.
7	Specifies that the authentication key will be encrypted.
authentication key	The authentication key (a text string up to 65 characters in length).
auth-port	Configures the port used by the RADIUS server for authentication
acc-port	Configures the port used by the RADIUS server for accounting
port number	The port number (an integer between 0 and 65535). The default authentication port is 1812, and the default accounting port is 1813.
timeout	Configures the amount of time, in seconds, before a RADIUS server connection attempt is considered to have failed.
timeout interval	The time interval after which the RADIUS server will timeout (in seconds, from 1 to 60). The default value is 5 seconds.
retransmit	Configures the number of retries the switch will make to establish a connection with the RADIUS server after the initial attempt failed.
number of retries	The number of retries (an integer between 0 and 5). The default value is one retry.

Using **no** before the command removes the specified RADIUS server address or reset one of its parameters if specified.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.
10.4	Added *hostname* option.

Examples

The following command configures the IP address of a RADIUS sever:

```
Switch(config)# radius-server host 10.34.152.10
```

The following command configures the authentication and accounting ports used by the switch to connect to a RADIUS sever, and the number of retries to connect to that server to 3:

```
Switch(config)# radius-server host 10.34.152.10 auth-port 1900 acc-port
1901 retransmit 3
```

radius-server key

Configures the global authentication key to be used when connecting to any RADIUS server.

If a RADIUS server is configured with a specific authentication key, then the global key is ignored when establishing a connection to that RADIUS server.

Syntax

[no] radius-server key [0|7] *<authentication key>*

where:

Parameter	Description
0	Specifies that the authentication key will not be encrypted. This is the default encryption method.
7	Specifies that the authentication key will be encrypted.
authentication key	The authentication key (a text string up to 65 characters in length).

Using **no** before the command will remove the global authentication key.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures an encrypted global authentication key to used when establishing a connection to a RADIUS server:

```
Switch(config)# radius-server key 7 myRADIUSserverKey
```

radius-server retransmit

Globally configures the number of retries the switch will make to establish a connection with a RADIUS server after the initial attempt failed.

If a RADIUS server is configured with a specific number of retries, then the global setting is ignored when establishing a connection to that RADIUS server.

By default, the switch will retry one more time to connect to the RADIUS server.

Syntax

[no] radius-server retransmit *<number of retries>*

where:

Parameter	Description
number of retries	The number of retries (an integer between 0 and 5).

Using **no** before the command will reset the number of retries to the default value.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the number of retries to 3:

```
Switch(config)# radius-server retransmit 3
```

radius-server timeout

Configures the amount of time, in seconds, before a RADIUS server connection attempt is considered to have failed.

Syntax

[no] radius-server timeout *<timeout interval>*

where:

Parameter	Description
timeout interval	The time interval after which the RADIUS server will timeout (in seconds, from 1 to 60). The default value is 5 seconds.

Using **no** before the command will reset the timeout interval to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the timeout interval to 12 seconds:

```
Switch(config)# radius-server timeout 12
```

clear cores

Clears all the core dump information stored on the switch.

Syntax

```
clear cores
```

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command clears all the core dump information from the switch:

```
Switch(config)# clear cores
```

clear ssh hosts

Resets the list of trusted Secure Shell (SSH) hosts.

Syntax

`clear ssh hosts`

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command resets the list of trusted SSH hosts:

```
Switch> clear ssh hosts
```

resequence

Modifies the already assigned sequence numbers of an access list.

Syntax

resequence {ip|arp|mac} access-list *<access-list name> <starting sequence number> <increment value>*

where:

Parameter	Description
ip	Re-sequence an IP ACL.
arp	Re-sequence an ARP ACL.
mac	Re-sequence a MAC ACL.
access-list *access-list name*	The name of the existent ACL that is re-sequenced.
starting sequence number	First entry number (a value from 1 to 2147483645).
increment value	Increment by which to separate the entry numbers of the statements. By default the entry has a sequence number of 10 more than the last entry in the access list.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to re-sequence numbers to access list:

```
Switch(config)# resequence ip access-list test 34 20
```

restApi pki

Configures a Public Key Infratructure (PKI) profile for the Representational State Transfer (REST) server. The new PKI profile will be user only after the REST API is re-enabled.

Syntax

restApi pki *<PKI profile name>* **vrf {default|management}**

where:

Parameter	Description
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.
vrf default	Configures a PKI profile for the REST server using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Configures a PKI profile for the REST server using the management VRF instance.

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command configures a PKI profile for the REST server on the management VRF instance:

```
Switch(config)# restApi pki myPKIprofile vrf management
```

script-job

Defines a script job.

Syntax

[no] script-job *<job name>* **{QUOTE_LINE|time {QUOTE_LINE|daily|hourly|monthly|reboot|weekly|yearly}**

where:

Parameter	Description
<job name>	Script file to run.
QUOTE_LINE	Crontab time format. Individual arguments in the string must be separated by one or more space characters.
daily	Runs once a day at midnight.
hourly	Runs once a hour at the beginning of the hour.
monthly	Runs once a month at midnight on the morning of the first day of the month.
reboot	Runs at boot.
weekly	Runs once a week at midnight of Sunday morning of the first day of the month.
yearly	Runs once a year at midnight of the morning of January 1st.

Using **no** before the command removes a running script.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to define a script job:

```
Switch(config)# script-job test.py time daily
```

secure mode enable

Enables or disables Legacy mode as switch security mode.

Syntax

```
[no] secure mode enable
```

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to switch the security mode to Legacy mode:

```
Switch(config)# no secure mode enable
```

no script

Deletes a script file.

Syntax

no script {<*file name*>**|all}**

where:

Parameter	Description
<*file name*>	Name of the script file to delete.
all	Deletes all script files.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to delete all script files:

```
Switch(config)# no script all
```

no script-log

Deletes a script log file.

Syntax

```
no script-log {<file name>|all}
```

where:

Parameter	Description
<file name>	Name of the script log file to delete.
all	Deletes all script log files.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to delete all script log files:

```
Switch(config)# no script-log all
```

sflow collector

Configures the sFlow analyzer IP address.

Syntax

[no] sflow collector ip *<IPv4 address>* **[port** *<port>***] [vrf** *<vrf>***]**

where:

Parameter	Description
IPv4 address	The IP address of the sFlow analyzer.
port *<port>*	The UDP port of the sflow analyzer; default value is 6343.
vrf *<vrf>*	The VRF; default value is `default`.

Using **no** before the command resets the setting to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how set the sFlow collector:

```
Switch(config)# sflow collector ip 1.1.1.1
```

sflow max-datagram-size

Configures the maximum size of an sFlow datagram.

Syntax

[no] sflow max-datagram-size *<size>*

where:

Parameter	Description
size	The maximum size of an sFlow datagram; an integer from 200-9000. The default maximum datagram size is 1500.

Using **no** before the command resets the setting to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set he maximum size of an sFlow datagram:

```
Switch(config)# sflow max-datagram-size 300
```

sflow max-sampled-size

Configures the maximum size of sFlow packets to be sampled.

Syntax

[no] sflow max-sampled-size *<size>*

where:

Parameter	Description
size	The maximum size of sFlow packets to be sampled; an integer from 64-256. The default maximum sampled size is 128.

Using **no** before the command resets the setting to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how configure the maximum size of sFlow packets:

```
Switch(config)# sflow max-sampled-size 65
```

sflow polling-interval

Enables sFlow polling and sets the polling interval.

Syntax

[no] sflow polling-interval *<seconds>*

where:

Parameter	Description
seconds	Time interval, in seconds; an integer from 0-86400. The default interval is 60.

Using **no** before the command resets the setting to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set a polling interval:

```
Switch(config)# sflow polling-interval 500
```

sflow sampling-rate

Configures the sFlow sampling rate.

Syntax

[no] sflow sampling-rate *<rate>*

where:

Parameter	Description
rate	Sampling rate; an integer from 4096-1000000000. The default rate is 4096.

Using **no** before the command resets the setting to its default value.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set sFlow sampling rate:

```
Switch(config)# sflow sampling-rate 5000
```

snmp-server community

Configures the community table entry. The configured entry is stored in the community table list in the SNMP engine. This table is used to configure community strings in the Local Configuration Datastore (LCD) of SNMP engine.

Syntax

[no] snmp-server community *<name>* **[ro|rw|group** *<word>***|view** *<view name>* **version {v1|v2c} {ro|rw}]**

where:

Parameter	Description
<name>	SNMP community name.
view *<view name>*	View name.
v1	Sets v1 for SNMPv1.
v2c	Sets v2c for SNMPv2c.
ro	Read-only access with this community string.
rw	Read-write access with this community string.
group *<word>*	Group to which the community belongs.

Using **no** before the command removes the community table entry.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure community tale entries:

```
Switch(config)#snmp-server community test view test2 version v1 ro
```

snmp-server contact

Sets the name of the system contact.

[no] snmp-server contact *<string>*

where:

Parameter	Description
<string>	Name of the contact.

Using **no** before the command removes a SNMP contact.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the name of a contact:

```
Switch(config)# snmp-server contact test
```

snmp-server enable

Enables or disables SNMP engine.

Syntax

```
[no] snmp-server enable {snmp|traps [bfd|link [linkDown|
linkUp]]}
```

where:

Parameter	Description
snmp	Enables SNMP management.
bfd	Enables Bidirectional Forwarding Detection (BFD) traps.
link	Enables the sending of SNMP link up and link down traps for a specific system port.
linkDown	IETF Link state down notification.
linkUp	IETF Link state up notification.

Using **no** before the command turns off the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable SNMP engine:

```
Switch(config)# snmp-server enable snmp
```

snmp-server host

Sets the recipient of a SNMP notification operation.

Syntax

[no] snmp-server host {<*ip address*>**|**<*hostname*>**}**
{informs|traps|version} version {1|2c|3} <*user name*> **[udp-port**
<*port number*>**]**

where:

Parameter	Description
IP address	IPv4 or IPv6 address of SNMP notification host.
hostname	Host name of SNMP notification host.
informs	Sends inform messages to this host.
traps	Sends traps messages to this host.
version	SNMP version to use for notification messages.
1	Sets v1 for SNMPv1.
2c	Sets v2c for SNMPv2c.
3	Sets v3 for SNMPv3.
user name	SNMP community string or SNMPv3 user name.
udp-port *port number*	The UDP port number of the notification host (a number from 1 to 65535).

Using **no** before the command removes a specified host.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the *hostname* option.

Example

The following shows how to set a SNMP host:

```
Switch(config)# snmp-server host 255.0.0.0 traps version 1 test
```

Restrictions

The maximum number of SNMP hosts is 16.

snmp-server location

Sets the name of the system location.

Syntax

[no] snmp-server location *<string>*

where:

Parameter	Description
string	Name of the system location.

Using **no** before the command removes a specified name.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set a SNMP server location:

```
Switch(config)# snmp-server location test
```

snmp-server tcp-session

Enables or disables SNMP TCP session authentication.

Syntax

[no] snmp-server tcp-session

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable TCP session:

```
Switch(config)# snmp-server tcp-session
```

snmp-server trap vrf

Configures the Virtual Routing and Forwarding (VRF) instances used for SNMP notifications.

By default, SNMP notifications are sent through all VRF instances.

Syntax

`[no] snmp-server trap vrf {default|management|all}`

where:

Parameter	Description
`default`	Sets the data port as trap source.
`management`	Sets the management port as trap source.
`all`	Sets both data port and management port as trap sources.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to set the management port as trap source:

```
Switch(config)# snmp-server trap vrf management
```

snmp-server user

Sets a user security model (USM) entry for an authorized user.

Syntax

[no] snmp-server user *<name>* **[auth{md5|sha} {***<password>* **priv {des|aes}** *<private password>***}]**

[no] snmp-server user *<name>* **[network-admin [auth{md5|sha} {***<password>* **priv {des|aes} <***private password>***}]]**

[no] snmp-server user *<name>* **[network-operator [auth{md5|sha} {***<password>* **priv {des|aes}** *<private password>***}]]**

where:

Parameter	Description
name	User name.
auth	Sets the authentication protocol.
md5|sha	Available authentication protocols: ● md5 ● sha
password	Password.
priv	Type of privacy protocol.
des|aes *private password*	Available privacy protocols: ● des (CBC-DES Symmetric Encryption Protocol) ● aes (AES-128 Advanced Encryption Standard Protocol)

Using **no** before the command disable a user.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set a user:

```
Switch(config)# snmp-server user tester auth md5 1qazxsw2#EDC priv aes
pl,mkoO9i1JN
```

snmp-server view

Sets a SNMP view.

Syntax

[no] snmp-server view *<name>* **OID-TREE {excluded|included}**

where:

Parameter	Description
<name>	Name of the view.
excluded	Specify view to exclude.
included	Specify view to include.

Using **no** before the command removes a specified view.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set a SNMP view:

```
Switch(config)# snmp-server view test OID-TREE excluded
```

spanning-tree mode

Enables or disables Multiple Spanning Tree (MST) mode or Rapid per-VLAN Spanning Tree protocol (RPVST+) mode.

Syntax

`spanning-tree mode {disable|mst|rapid-pvst}`

`no spanning-tree mode`

where:

Parameter	Description
`disable`	Disables STP mode.
`mst`	Enables MST mode.
`rapid-pvst`	Enables RPVST+ mode.

Using **no** before the command restores the default settings.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Added `rapid-pvst` option.

Example

The following shows how to enable MST mode:

```
Switch(config)# spanning-tree mode mst
```

Restrictions

When you select the disable option, the switch globally turns Spanning Tree off. All ports are placed into forwarding state. Any BPDU's received are flooded.

spanning-tree pathcost

Calculates default port path cost.

Syntax

`[no] spanning-tree pathcost method {long|short}`

where:

Parameter	Description
long	32 bit based values for default port path costs.
short	16 bit based values for default port path costs.

Using **no** before the command turns off this feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to calculate default path cost:

```
Switch(config)# spanning-tree pathcost method long
```

Restrictions

When you are using MST spanning tree mode, the switch uses only the long method for calculating path cost.

spanning-tree mst priority

Configures the bridge priority for the specified MSTP instance. The bridge priority parameter controls which bridge on the network is the MSTP root bridge. To make this switch the root bridge, configure the bridge priority lower than all other switches and bridges on your network. The lower the value, the higher the bridge priority.

Syntax

[no] spanning-tree mst *<range>* **priority** *<number>*

where:

Parameter	Description
<range>	MST instance range (ranges from 0 to 64).
priority *<number>*	Bridge priority number. The range is 0 to 61440, in steps of 4096 (0, 4096, 8192, 12288 ...). The default value is 32768.

Using **no** before the command removes a previous configured instance bridge priority.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set an instance bridge priority:

```
Switch(config)# spanning-tree mst 7-9 priority 8192
```

spanning-tree mst forward-time

Configures the forward delay time in seconds. The forward delay parameter specifies the amount of time that a bridge port has to wait before it changes from the discarding and learning states to the forwarding state.

Syntax

[no] spanning-tree mst forward-time *<value>*

where:

Parameter	Description
<value>	Number of seconds for the forward delay timer (a number from 4 to 30). The default value is 15.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure forward time:

```
Switch(config)# spanning-tree mst forward-time 30
```

spanning-tree mst hello-time

Configures the port Hello time.The Hello time specifies how often the bridge transmits a configuration bridge protocol data unit (BPDU). Any bridge that is not the root bridge uses the root bridge Hello value.

Syntax

spanning-tree mst hello-time *<value>*

no spanning-tree mst hello-time

where:

Parameter	Description
<value>	Number of seconds for the hello BPDU time interval (a number from 1 to 10). The default value is 2.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure hello time interval:

```
Switch(config)# spanning-tree mst hello-time 10
```

spanning-tree mst max-age

Configures the maximum age interval in seconds. The maximum age parameter specifies the maximum time the bridge waits without receiving a configuration bridge protocol data unit before it reconfigures the MSTP network.

Syntax

spanning-tree mst max-age *<value>*

no spanning-tree mst max-age

where:

Parameter	Description
<value>	Number of seconds for the hello BPDU time interval (a number from 6 to 40). The default value is 20.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the maximum age interval:

```
Switch(config)# spanning-tree mst max-age 30
```

spanning-tree mst max-hops

Configures the maximum number of bridge hops a packet may traverse before it is dropped.

Syntax

[no] spanning-tree mst max-hops *<value>*

where:

Parameter	Description
<value>	Maximum number of hops the BPDU is valid for all MST instance (a number from 1 to 255). The default value is 20.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the maximum number of bridge hops:

```
Switch(config)# spanning-tree mst max-hops 100
```

spanning-tree vlan forward-time

Configures the forward delay time in seconds. The forward delay parameter specifies the amount of time that a bridge port has to wait before it changes from the discarding and learning states to the forwarding state.

Syntax

[no] spanning-tree vlan *<VLAN number>* **forward-time** *<value>*

where:

Parameter	Description
VLAN number	The VLAN number. Range is from 1 to 4094.
<value>	Number of seconds for the forward delay timer (a number from 4 to 30). The default value is 15.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to configure forward time:

```
Switch(config)# spanning-tree vlan 2 forward-time 30
```

spanning-tree vlan hello-time

Configures the port Hello time.The Hello time specifies how often the bridge transmits a configuration bridge protocol data unit (BPDU). Any bridge that is not the root bridge uses the root bridge Hello value.

Syntax

[no] spanning-tree vlan *<VLAN number>* **hello-time** *<value>*

where:

Parameter	Description
VLAN number	The VLAN number. Range is from 1 to 4094.
<value>	Number of seconds for the hello BPDU time interval (a number from 1 to 10). The default value is 2.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to configure hello time interval:

```
Switch(config)# spanning-tree vlan 4 hello-time 10
```

spanning-tree vlan max-age

Configures the maximum age interval in seconds. The maximum age parameter specifies the maximum time the bridge waits without receiving a configuration bridge protocol data unit before it reconfigures the RPVST+ network.

Syntax

[no] spanning-tree vlan *<VLAN number>* **max-age** *<value>*

where:

Parameter	Description
VLAN number	The VLAN number. Range is from 1 to 4094.
<value>	Number of seconds for the hello BPDU time interval (a number from 6 to 40). The default value is 20.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to configure the maximum age interval:

```
Switch(config)# spanning-tree vlan 5 max-age 30
```

spanning-tree vlan priority

Configures the bridge priority for the specified RPVST+ instance. The bridge priority parameter controls which bridge on the network is the RPVST+ root bridge. To make this switch the root bridge, configure the bridge priority lower than all other switches and bridges on your network. The lower the value, the higher the bridge priority.

Syntax

[no] spanning-tree vlan *<VLAN number>* **priority** *<number>*

where:

Parameter	Description
VLAN number	The VLAN number. Range is from 1 to 4094.
priority *<number>*	Bridge priority number. The range is 0 to 61440, in steps of 4096 (0, 4096, 8192, 12288 ...). The default value is 32768.

Using **no** before the command removes a previous configured instance bridge priority.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to set an instance bridge priority:

```
Switch(config)# spanning-tree vlan 3 priority 8192
```

ssh key

Configures SSH keys.

Syntax

[no] ssh key {dsa|rsa [length *<value>***]} [force]**

where:

Parameter	Description
dsa	Generates SSH server DSA keys.
rsa	Generates SSH server RSA keys.
length *<value>*	Force key generation length (a number from 768 to 2048).
force	Forces key generation.

Using **no** before the command removes a SSH key.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure a SSH key:

```
Switch(config)#ssh key dsa force
```

ssh login-attempts

Sets the number of failed login attempts before disconnecting the user.

Syntax

[no] ssh login-attempts *<retries>*

where:

Parameter	Description
<retries>	Number of retries (a value from 1 to 10). The default value is 3.

Using **no** before the command restores the default settings.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure a maximum number of login attempts:

```
Switch(config)# ssh login-attempts 5
```

ssh server

Sets the SSH server port number.

Syntax

`ssh server port` *<port number>*

where:

Parameter	Description
<port number>	SSH server port number (a value from 1 to 65535).

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following show how to configure SSH port number:

```
Switch(config)# ssh server port 10
```

boot image

Configures the software image to be booted on the next switch reload.

Syntax

```
boot image {active|onie-image {install|rescue|uninstall|
update}|standby}
```

where:

Parameter	Function
`active`	On the next reload, the switch will boot using the active image.
`onie-image install`	On the next reload, the switch will boot using the ONIE image in ONIE OS installer mode.
`onie-image rescue`	On the next reload, the switch will boot using the ONIE image in ONIE rescue mode.
`onie-image uninstall`	On the next reload, the switch will boot using the ONIE image in ONIE OS uninstall mode.
`onie-image update`	On the next reload, the switch will boot using the ONIE image in ONIE self update mode.
`standby`	On the next reload, the switch will boot using the standby image.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the switch to boot using the standby image on the next reload:

```
Switch(config)# boot image standby
```

boot zerotouch force

By default, the switch enters ZTP mode at reload only when booting with factory default configuration. This command forces the switch to enter ZTP mode at reload without checking the boot configuration first.

Syntax

boot zerotouch force {disable|enable}

no boot zerotouch force

where:

Parameter	Function
disable	On the next reload, the switch will disable ZTP mode.
enable	On the next reload, the switch will enable ZTP mode.

Using **no** before the command, the switch will not enter ZTP mode at reload even when booting with factory default configuration.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables the switch to enter ZTP mode when booting every time, no matter what boot config is being used:

```
Switch(config)# boot zerotouch force enable
```

system cores

Enables users to retrieve the core dump files from the switch.

Syntax

[no] system cores *<tftp url>* **vrf [management|default]**

where:

Parameter	Description
<tftp url>	URL link location (tftp:[//server[:port]][/path]).

Using **no** before the command turns off this feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable retrieving the core dumb files:

```
Switch(config)# system cores tftp://10.188.71.14/ vrf management
```

system eject-usb

Enables users to safely eject USB devices.

Syntax

```
system eject-usb
```

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable USB eject:

```
Switch(config)# system eject-usb
```

system service-led operational-enable

Enables (on) or disables (off) the Service Required LED to glow in steady blue to locate the device.

Syntax

[no] system service-led operational-enable

Using **no** before the command turns off the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable service led:

```
Switch(config)# system service-led operational-enable
```

system vlan reserve

Configures the range of VLANs reserved for internal use.

Syntax

system vlan reserve *<VLAN_range>*

no system vlan reserve

where:

Parameter	Description
VLAN range	Range of VLANs.

Using **no** before the command resets the reserved VLAN range to the default value (4000-4094).

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to configure a new reserved VLAN range:

```
Switch(config)# system vlan reserve 2001-2004
```

tacacs-server host

Specifies a TACACS+ authentication server.

Syntax

`tacacs-server host {`*`<IPv4 address>`***`|`***`<IPv6 address>`***`|`***`<hostname>`***`} [key`**
`[0|7]` *`<key string>`***`] [port`** *`<server port>`***`]`**

`no tacacs-server host {`*`<IPv4 address>`***`|`***`<IPv6 address>`***`|`***`<hostname>`***`}`**

where:

Parameter	Description
IPv4 address	The IPv4 address of the TACACS+ server.
IPv6 address	The IPv6 address of the TACACS+ server.
hostname	The hostname of the TACACS+ server.
key *key string*	The key used when communicating with the configured TACACS+ server. The *key string* can be up to 63 characters.
0	The key is not encrypted.
7	The key is encrypted.
port *server port*	The port used to connect to the TACACS+ server. The *server port* is from 1 to 65535.

Using the **no** form of the command deletes the specified TACACS+ server.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Added *hostname* option.

Example

The following shows how to set a TACACS+ host:

```
Switch(config)# tacacs-server host 255.0.0.0 key 7 test
```

Restrictions

You can configure up to four TACACS+ servers.

tacacs-server key

Configures a global TACACS+ encryption or decryption key.

Syntax

tacacs-server key [0|7] *<word>*

no tacacs-server key

where:

Parameter	Description
0	Default clear text password.
7	Default encrypted text password.
<word>	TACACS password name. The password length can be up to 63 characters, only lowercase letters and numbers and it must start with a letter.

Using **no** before the command removes previous settings.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set default TACACS key properties:

```
Switch(config)# tacacs-server key 0 test
```

Restrictions

This is a global configuration value for all TACACS+ servers. This value will be overwritten by **tacacs-server host key** command.

teaming enable

Enables teaming globally. This feature is used for configuring Layer 2 failover MMON.

By default, the feature is disabled.

Syntax

[no] teaming enable

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable teaming:

```
Switch(config)# teaming enable
```

teaming profile

Enables and configures the teaming profile.

Syntax

```
[no] teaming profile <profile ID> {enable
|limit <limit value>|
mmon {control|monitor} interface {ethernet <port
number>|port-channel <channel number>}}
```

where:

Parameter	Description
profile ID	The teaming profile number; an integer from 1-200.
enable	Enables the teaming profile.
limit *<limit value>*	The teaming profile monitor ports limit; an integer from 1-1024.The default value is 1.
mmon control	Adds ports to MMON control ports.
mmon monitor	Adds ports to MMON monitor ports.
interface ethernet *<port number>*	Sets the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *<channel number>*	Sets the specified Link Aggregation Group (LAG). The *channel number* is from 1 to 4096.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables the teaming profile:

```
Switch(config)# teaming profile 5 enable
```

telemetry controller ip

Configures the telemetry controller by specifying its IP address, TCP port, and the Virtual Routing and Forwarding (VRF) instance used to reach the controller.

Syntax

telemetry controller ip *<IPv4 address>* **port** *<TCP port>* **[vrf {default|management}]**

where:

Parameter	Description
IPv4 address	The IPv4 address of the telemetry controller.
port *TCP port*	Configures the TCP port used by the telemetry controller. The TCP port is an integer from 1 to 65535.
vrf default	Associates the telemetry controller with the default VRF instance.
vrf management	Associates the telemetry controller with the management VRF instance.

The following command deletes the previously configured telemetry controller:

no telemetry controller

Modes

Global Configuration Mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command configures the telemetry controller's IP address to `10.125.89.15` and the TCP port to `2488`:

```
Switch(config)# telemetry controller ip 10.125.89.15 port 2488
```

telemetry controller protocol https

Enables or disables the telemetry agent to use the Hypertext Transfer Protocol Secure (HTTPS) instead of HTTP when communicating with the remote controller.

Syntax

`[no] telemetry controller protocol https`

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables the telemetry agent to use HTTPS when communicating with the remote controller:

```
Switch(config)# telemetry controller protocol https
```

telemetry controller username

Configures a user (username and password pair) to be used by the telemetry agent to authenticate with the remote controller through basic authentication mechanisms.

Syntax

telemetry controller username *<username>* **password [encrypted]** *<password>*

where:

Parameter	Description
username	The name of the user used to authenticate with the remote telemetry controller.
encrypted	The configured password will be encrypted.
password	The password used to authenticate with the remote telemetry controller.

The following command deletes the previously configured user:

no telemetry controller user

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command creates a user for the telemetry agent to use to authenticate with the remote controller:

```
Switch(config)# telemetry controller username User1 password Pass1
```

telemetry heartbeat

Enables or disables the sending of heartbeat messages to the configured controller and sets the time interval between these messages. The heartbeat messages allow collectors to learn about the switches present in the network.

Note: Even if this service is enabled on the switch, the device will not send heartbeat messages if there are no telemetry controllers configured.

Syntax

telemetry heartbeat {enabled interval *<heartbeat interval>*|
disabled}

where:

Parameter	Description
enabled	Enables the sending of heartbeat messages to the configured telemetry controller.
interval *heartbeat interval*	Configures the time interval between consecutive heartbeat messages. The *heartbeat interval* is an integer from 1 to 600 seconds. The default value is 5 seconds.
disabled	Disables the sending of heartbeat messages.

Modes

Global Configuration Mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command enables the sending of heartbeat messages with a frequency of one message every 20 seconds:

```
Switch(config)# telemetry heartbeat enabled interval 20
```

telnet

Sets an optional Telnet server port number for cases where the server listens for Telnet sessions on a non-standard port.

Syntax

telnet server port *<port number>*

where:

Parameter	Description
<port number>	Telnet port number (a value from 1 to 65535).

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to set an optional telnet connection:

```
Switch(config)# telnet server port 55
```

username

Adds or modifies user with a specified role or password.

Syntax

[no] username *<username>* **[password [encrypted]** *<password>*] **[role {network-admin|network-operator}]**

no username *<username>*

where:

Parameter	Description
username	The name of the user. The *username* must be between 2 and 28 characters in length.
password *password*	The password associated with the specified username. The *password* must be between 8 and 80 characters in length. **Note:** If history checking is enabled, the entered password must be different from the last four used passwords.
encrypted	Specifies that the password is encrypted.
role	Role assigned to the user. The default is network-operator.

Using **no** before the command deletes the specified user and all associated passwords.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.2	Password checking mechanism was added.

Example

The following shows how to create a new user:

```
Switch(config)# username admin35 password passAdmin35 role network-admin
```

Related Commands

Command	Description
password history-checking	Enables or disables password tracking.

vlag auto-recovery

Sets the duration in seconds of the auto-recovery timer. This timer configures how long after boot-up configuration load, the switch can assume the Primary role from an unresponsive ISL peer and bring up the vLAG ports.

Syntax

[**no**] **vlag auto-recovery** *<value>*

where:

Parameter	Description
<value>	Time interval, in seconds (an integer from 240 to 3600). The default value is 300 seconds.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the auto-recovery value:

```
Switch(config)# vlag auto-recovery 1000
```

vlag config-consistency disable

Disables or enables vLAG peers inconsistency check.

By default, this setting is enabled on the switch.

Syntax

[no] vlag config-consistency disable

Using **no** before the command enables the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables vLAG configuration consistency check:

```
Switch(config)# no vlag config-consistency disable
```

vlag config-consistency strict

Enables or disables strict configuration consistency checking.

By default, this feature is disabled.

Note: Using this command, low priority items act as high priority items.

Syntax

[no] vlag config-consistency strict

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables strict mode:

```
Switch(config)# vlag config-consistency strict
```

vlag enable

Enables or disables vLAG globally.

Syntax

[**no**] **vlag enable**

Using **no** before the command turns off the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following enables vLAG:

```
Switch(config)# vlag enable
```

vlag hlthchk keepalive-attempts

Sets the number of vLAG keep alive attempts.

Syntax

[no] vlag hlthchk keepalive-attempts *<value>*

where:

Parameter	Description
value	Number of keepalive attempts made before declaring the peer is down (a number from 1 to 24). The default value is 3.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the number of vLAG keep alive attempts:

```
Switch(config)# vlag hlthchk keepalive-attempts 10
```

vlag hlthchk keepalive-interval

Sets, in seconds, the time between vLAG keep alive attempts.

Syntax

[no] vlag hlthchk keepalive-interval *<value>*

where:

Parameter	Description
<value>	Time interval, in seconds (a number from 2 to 300). The default value is 5.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the keep alive interval:

```
Switch(config)# vlag hlthchk keepalive-interval 100
```

vlag hlthchk peer-ip

Configures the IP address of the peer switch, used for health checks. Use the management IP address of the peer switch.

Syntax

[*no*] **vlag hlthchk peer-ip {**<*ipv4 address*>**|**<*ipv6 address*>**}**

where:

Parameter	Description
<*ipv4 address*>	IPv4 address for health check connection.
<*ipv6 address*>	IPv6 address for health check connection.

Using **no** before the command removes previous settings.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.2	The <*ipv6 address*> argument was added.

Example

The following sets the IPv4 address for health check connection:

```
Switch(config)# vlag hlthchk peer-ip 1.1.1.1
```

vlag hlthchk retry-interval

Sets, in seconds, the vLAG health check connect retry interval.

Syntax

[**no**] **vlag hlthchk retry-interval** *<value>*

where:

Parameter	Description
<value>	Time interval, in seconds (a number from 1 to 300). The default value is 30.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure retry interval:

```
Switch(config)# vlag hlthchk retry-interval 100
```

vlag instance

Configures vLAG instance parameters.

Syntax

[no] **vlag instance** *<vLAG number>* {**enable|port-channel** *<LAG number>*}

where:

Parameter	Description
<vLAG number>	vLAG instance number (a number from 1 to 64).
enable	Enables vLAG instance.
port-channel	Attaches vLAG instance to a LAG.
<LAG number>	LAG identifier (a number from 1 to 4096).

Using **no** before the command turns off this feature or removes previous settings.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable vLAG instance:

```
Switch(config)# vlag instance 1 port-channel 1000
Switch(config)# vlag instance 1 enable
```

vlag isl

Enables vLAG Inter-Switch Link (ISL) on the selected LAG.

Syntax

[**no**] **vlag isl port-channel** *<LAG number>*

where:

Parameter	Description
<LAG number>	LAG identifier (a number from 1 to 4096).

Using **no** before the command removes previous settings.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable vLAG ISL:

```
Switch(config)# vlag isl port-channel 100
```

vlag mac-address-table refresh

Enables or disables the periodic check of the aging status of synchronized Forwarding Database (FDB) entries. When a MAC address is marked for removal from the FDB table, the entry is reinstalled instead.

By default, the feature is enabled.

Syntax

[no] **vlag mac-address-table refresh**

Using **no** before the command turns off the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable periodic check:

```
Switch(config)# vlag mac-address-table refresh
```

Restrictions

This option takes effect only if the aging value for FDB entries is set to 40 seconds or more.

vlag peer-gateway

Enables or disables vLAG Peer Gateway. When enabled, a vLAG switch acts as the active gateway for packets addressed to its vLAG peer.

By default, vLAG Peer Gateway is disabled.

Syntax

[no] vlag peer-gateway

Using **no** before the command disables the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to enable vLAG peer gateway:

```
Switch(config)# vlag peer-gateway
```

vlag priority

Configures the vLAG priority for the switch, used for election of Primary and Secondary vLAG switches. The switch with lower priority is elected to the role of Primary vLAG switch.

Syntax

[no] **vlag priority** *<priority value>*

where:

Parameter	Description
<priority value>	vLAG priority value (a number from 0 to 65535). The default value is 0.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure vLAG priority:

```
Switch(config)# vlag priority 50
```

vlag startup-delay

Sets the vLAG startup delay interval.

Syntax

[no] **vlag startup-delay** *<delay value>*

where:

Parameter	Description
<delay value>	Delay time, in seconds (a number from 0 to 3600). The default value is 120.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets vLAG startup delay interval:

```
Switch(config)# vlag startup-delay 1000
```

vlag tier-id

Sets the vLAG tier ID.

Syntax

[no] **vlag tier-id** *<value>*

where:

Parameter	Description
<value>	vLAG tier-id value (a number from 1 to 512). The default value is 0.

Using **no** before the command restores the default setting.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure a vLAG tier-id value:

```
Switch(config)# vlag tier-id 100
```

vlag vrrp active

Configures all vLAG related VRRP domains to forward L3 traffic.

By default, this feature is enabled.

Syntax

[no] vlag vrrp active

Modes

Global Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following shows how to enable vLAG VRRP passive mode on the switch:

```
Switch(config)# no vlag vrrp active
```

vlan access-map

Configures VLAN access-maps.

Syntax

[no] **vlan access-map** *<name>*

where:

Parameter	Description
<name>	Name of the access-map.

Using **no** before the command turns off the feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure VLAN access-map named test:

```
Switch(config)# vlan access-map test
```

vlan classifier

Configures the IP subnet based VLAN classification rule.

The **no** form of the command deletes the rule based on IP or target VLAN ID. If no parameter specified, all the rules are deleted.

Syntax

vlan classifier subnet-vlan ip {*<IP address/mask>* **|***<IP address>*/*<submask>***} vlan** *<VLAN-ID>* **[priority** *<0-7>***]**

no vlan classifier subnet-vlan [ip {*<IP address/mask>* **|***<IP address>*/*<submask>***} | vlan** *<VLAN-ID>***]**

where:

Parameter	Description
IP address	An IPv4 address.
mask	Shorthand mask for an IP address.
submask	If the IPv4 address does not have a submask (/M), use one in the form of an IPv4 address.
VLAN ID	The ID of the target VLAN; an integer from 1-4093.
priority	The priority; an integer from 0-7.

Modes

Global Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to configure the IP subnet based VLAN classification rule:

```
Switch(config)# vlan classifier subnet-vlan ip 1.1.1.1 vlan 4 priority 7
```

vlan dot1q tag native

Disables or enables VLAN tag persistence. When disabled, the VLAN tag is removed at egress from packets whose VLAN tag matches the port PVID/Native-vlan.

The default setting is disabled.

Syntax

[no] **vlan dot1q tag native [egress-only]**

where:

Parameter	Description
egress-only	Enables tag native VLAN only on egress-side.

Using **no** before the command disables this feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable VLAN tag persistence:

```
Switch(config)# vlan dot1q tag native
```

vlan filter

Configures VLAN access map filtering.

Syntax

[no] vlan filter *<name>* **vlan-list** *<vlan id or range>*

where:

Parameter	Description
<name>	Name of the VLAN access-map.
<vlan id or range>	VLAN ID or range.

Using **no** before the command turns off this feature.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure VLAN access-map filtering:

```
Switch(config)# vlan filter testAccessMap vlan-list 2
```

vrf context

Virtual routing and forwarding (VRF) allows multiple instances of a routing table to exist in a router and work simultaneously.

Syntax

`vrf context {default|management}`

where:

Parameter	Description
`default`	Default VRF. For data interfaces, a default VRF with ID 0 is created and associated with default FIB. All data IP interfaces are attached to default VRF.
`management`	Management VRF. By default, a VRF with ID1 is created.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable management VRF:

```
Switch(config)# vrf context management
Switch(config-vrf)#
```

Chapter 5. Interface Mode Commands

These commands enter you into an advanced configuration mode for the selected interface type.

interface

Enter the Interface Configuration Mode.

Syntax

interface {<*interface name*>**|ethernet** <*chassis number***/***port number*>**|**
loopback <*loopback interface*>**|mgmt 0|port-channel** <*LAG number*>**|**
vlan <*VLAN ID*>**}**

where:

Parameter	Function
interface name	Enters Interface Configuration mode for the named ethernet interface.
ethernet *chassis number***/***port number*	Enters Interface Configuration mode for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Enters Interface Configuration mode for the specified loopback interface (an integer from 0-7).
mgmt 0	Enters Interface Configuration mode for the specified management interface (0).
port-channel *LAG number*	Enters Interface Configuration mode for the specified LAG (an integer from 1-4096).
vlan *VLAN ID*	Enters Interface Configuration mode for the specified VLAN (an integer from 1-4093).

Mode

Global Command Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters interface command mode for LAG 4001:

```
Switch(config)# interface port-channel 4001
Switch(config-if)#
```

Restrictions

If you use **interface** *<interface name>*, the command will not work unless the interface with that name exists.

Related Commands

Command	Description
configure terminal	Enter Configuration Mode.

channel-group

Assigns the interface to a Link Aggregation Group (LAG).

Syntax

channel-group *<LAG number>* **mode {active|on|passive}**

no channel-group

where:

Parameter	Description
LAG number	The LAG to which to assign the current interface. The *LAG number* is an integer from 1 to 4096.
mode	Configures the aggregation mode of the interface.
active	Enables Link Aggregation Control Protocol (LACP) on the current LAG.
on	Disables LACP on the current LAG.
passive	Enables LACP on the current LAG only if an LACP device is detected at the other end of the link.

Using **no** before the command with no other arguments removes the interface from the LAG.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command assigns the current interface to LAG 1:

```
Switch(config-if)# channel-group 1 mode on
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

auto-policy enable

Enables or disables automatic policy provisioning on the current interface. The policy elements include VLAN, Access Control Lists (ACLs), and Quality of Service (QoS).

By default, the automatic policy provisioning is disabled.

Syntax

[no] auto-policy enable

Using **no** before the command disables automatic policy provisioning.

Modes

Interface Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables automatic policy provisioning on the interface:

```
Switch(config-if)# auto-policy enable
```

bfd authentication keyed-md5

Configures Bidirectional Forwarding Detection (BFD) with keyed message digest authentication.

Syntax

[no] bfd [ipv4|ipv6] authentication keyed-md5 {key-chain *<key chain name>***|key-id** *<key ID>* **key** *<authentication key string>***}**

where:

Parameter	Description
ipv4	Configures authentication only IPv4 BFD sessions.
ipv6	Configures authentication only IPv6 BFD sessions.
key-chain *key chain name*	Configures an authentication key-chain.
key-id *key ID*	Configures the ID of the authentication key. The *key ID* is an integer from 0 to 255.
key *authentication key string*	Configures the authentication key string.

Using **no** before the command turns off keyed message digest authentication.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command configures BFD for a keyed MD5 key-chain:

```
Switch(config-if)# bfd authentication keyed-md5 key-chain myKeyChain
```

The following command configures BFD for keyed MD5 authentication key with the key ID 12:

```
Switch(config-if)# bfd authentication keyed-md5 key-id 12 key myKeyString
```

bfd authentication keyed-sha1

Configures Bidirectional Forwarding Detection (BFD) with keyed Secure Hash Algorithm I authentication.

Syntax

[no] bfd [ipv4|ipv6] authentication keyed-sha1 {key-chain *<key chain name>***|key-id** *<key ID>* **key** *<authentication key string>***}**

where:

Parameter	Description
ipv4	Configures authentication only IPv4 BFD sessions.
ipv6	Configures authentication only IPv6 BFD sessions.
key-chain *key chain name*	Configures an authentication key-chain.
key-id *key ID*	Configures the ID of the authentication key. The *key ID* is an integer from 0 to 255.
key *authentication key string*	Configures the authentication key string.

Using **no** before the command turns off keyed Secure Hash Algorithm authentication.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following configures BFD for a keyed SHA1 authentication key-chain:

```
Switch(config-if)# bfd authentication keyed-sha1 key-chain myKeyChain
```

The following command configures BFD for keyed SHA1 authentication key with the key ID 12:

```
Switch(config-if)# bfd authentication keyed-sha1 key-id 12 key KeyString
```

bfd authentication meticulous-keyed-md5

Configures Bidirectional Forwarding Detection (BFD) with meticulous keyed Message Digest authentication.

Syntax

[no] bfd [ipv4|ipv6] authentication meticulous-keyed-md5 {key-chain *<key chain name>***|key-id** *<key ID>* **key** *<authentication key string>***}**

where:

Parameter	Description
ipv4	Configures authentication only IPv4 BFD sessions.
ipv6	Configures authentication only IPv6 BFD sessions.
key-chain *key chain name*	Configures an authentication key-chain.
key-id *key ID*	Configures the ID of the authentication key. The *key ID* is an integer from 0 to 255.
key *authentication key string*	Configures the authentication key string.

Using **no** before the command turns off meticulous keyed Message Digest authentication.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following configures BFD for a meticulous keyed MD5 authentication key-chain:

```
Switch(config-if)# bfd authentication meticulous-keyed-md5 key-chain
mykeychain
```

The following command configures BFD for meticulous keyed MD5 authentication key with the key ID 120:

```
Switch(config-if)# bfd authentication meticulous-keyed-md5 key-id 120 key
mystring
```

bfd authentication meticulous-keyed-sha1

Configures Bidirectional Forwarding Detection (BFD) with meticulous keyed Secure Hash Algorithm authentication.

Syntax

[no] bfd [ipv4|ipv6] authentication meticulous-keyed-sha1 {key-chain *<key chain name>***|key-id** *<key ID>* **key** *<authentication key string>***}**

where:

Parameter	Description
ipv4	Configures authentication only IPv4 BFD sessions.
ipv6	Configures authentication only IPv6 BFD sessions.
key-chain *key chain name*	Configures an authentication key-chain.
key-id *key ID*	Configures the ID of the authentication key. The *key ID* is an integer from 0 to 255.
key *authentication key string*	Configures the authentication key string.

Using **no** before the command turns off meticulous keyed Secure Hash Algorithm authentication.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following configures BFD for a meticulous keyed SHA1 authentication key-chain:

```
Switch(config-if)# bfd authentication meticulous-keyed-sha1 key-chain
mykeychain
```

The following command configures BFD for meticulous keyed SHA1 authentication key with the key ID 120:

```
Switch(config-if)# bfd authentication meticulous-keyed-sha1 key-id 120
key mystring
```

bfd authentication simple

Configures Bidirectional Forwarding Detection (BFD) with simple password authentication.

Syntax

[no] bfd [ipv4|ipv6] authentication simple {key-chain *<key chain name>***|key-id** *<key ID>* **key** *<authentication key string>***}**

where:

Parameter	Description
ipv4	Configures authentication only IPv4 BFD sessions.
ipv6	Configures authentication only IPv6 BFD sessions.
key-chain *key chain name*	Configures an authentication key-chain.
key-id *key ID*	Configures the ID of the authentication key. The *key ID* is an integer from 0 to 255.
key *authentication key string*	Configures the authentication key string.

Using **no** before the command turns off simple password authentication.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following configures BFD for a simple authentication key-chain:

```
Switch(config-if)# bfd authentication simple key-chain mykeychain
```

The following command configures BFD for a simple authentication key with the key ID 120:

```
Switch(config-if)# bfd authentication simple key-id 120 key mystring
```

bfd echo

Puts the BFD session into echo mode.

Syntax

[no] bfd [ipv4|ipv6] echo

where:

Parameter	Description
ipv4	Configures echo mode only IPv4 BFD sessions.
ipv6	Configures echo mode only IPv6 BFD sessions.

Using **no** before the command turns off echo mode.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command puts the BFD session into echo mode:

```
Switch(config-if)# bfd echo
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

bfd interval

Sets the BFD transmit interval, minimum receive interval, and hello multiplier.

Syntax

[no] bfd [ipv4|ipv6] interval *<transmit interval>* **minrx** *<receive interval>* **multiplier** *<multiplier value>*

where:

Parameter	Description
ipv4	Configures only IPv4 BFD sessions.
ipv6	Configures only IPv6 BFD sessions.
interval *transmit interval*	Configures the BFD transmit interval. The *transmit interval* is from 50 to 999 milliseconds.
minrx *receive interval*	Configures the BFD minimum receive interval. The *receive interval* is from 50 to 999 milliseconds.
multiplier *multiplier value*	Configures the BFD Hello multiplier. The *multiplier value* is an integer from 3 to 50.

Using **no** before the command restores the default settings.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the BFD transmit interval to 60 milliseconds with a minimum receive interval of 60 milliseconds and a Hello multiplier of 10:

```
Switch(config-if)# bfd interval 60 minrx 60 multiplier 10
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

bfd neighbor

Configures a BFD neighbor.

Syntax

[no] bfd neighbor src-ip *<IP address>* **dest-ip** *<IP address>*
[multihop] [non-persistent] [admin-down]

where:

Parameter	Description
src-ip	The source IP address of the BFD session.
IP address	An IPv4 or IPv6 address.
dest-ip	The destination IP address of the BFD neighbor.
multi-hop	Multi-hop session.
non-persistent	Non-persistent sessions will be removed from the running configuration after they go down.
admin-down	Administrative shutdown of the session.

Using **no** before the command removes the neighbor.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the a BFD neighbor with the source IP address
10.32.4.55, the destination IP address 10.32.4.56, and designates it as a
multi-hop, non-persistent session where the session admin is down:

```
Switch(config-if)# bfd neighbor src-ip 10.32.4.55 dest-ip 10.32.4.56
multihop non-persistent admin-down
```

Restrictions

The optional arguments `multihop`, `non-persistent`, and `admin-down` can be applied on the same line *only* if they are applied in the following order:

1. `multi-hop`

2. `non-persistent`

3. `admin`-down

bgp unnumbered

Enables or disables BGP unnumbered capability for a specific interface. Through this capability, the router is able to establish a BGP session via IPv6 link local address.

This feature is disabled by default.

Note: Make sure to enable first the unnumbered functionality under BGP Configuration mode.

Syntax

[no] bgp unnumbered

Modes

Interface Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable BGP unnumbered on a specific interface:

```
Switch(config-if)# bgp unnumbered
```

switchport access

Configures the access VLAN of the current interface.

Syntax

[no] switchport access vlan *<VLAN ID>*

where:

Parameter	Description
VLAN ID	Configures the specified VLAN as the access VLAN. The *VLAN ID* is an integer from 1 to 4093.

Using **no** before the command with all but the last argument resets the VLAN ID to the default value.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures VLAN 2 as the access VLAN:

```
Switch(config-if)# switchport access vlan 2
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport hybrid native vlan

Configures the native VLAN for the hybrid switchport:

Syntax

`switchport hybrid native vlan` *<VLAN ID>*

where:

Parameter	Description
VLAN ID	The ID of the VLAN.

Using **no** before the command with all but the last argument resets the VLAN ID to the default value.

Modes

Interface Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command sets the native VLAN when the port is in hybrid mode:

```
Switch(config-if)# switchport hybrid native vlan 5
```

switchport hybrid allowed vlan

Adds or removes VLANs from the allowed VLAN list for the hybrid switchport.

Syntax

[no] switchport hybrid allowed vlan {*<VLAN_LIST>* **| add <***VLAN_LIST***> | all | except** *<VLAN_LIST>* **| none | clear** *<VLAN_LIST>***}**

where:

Parameter	Description
VLAN LIST	A range or comma-separated list of allowed VLANs.
add	Add the following VLANs to the allowed list.
all	Add all VLANs.
except	Add all VLANs except the following.
none	No VLANs.
clear	Remove the following VLANs from the allowed list.

Using **no** before the command resets the allowed VLAN list for the hybrid switchport to the default: **all**.

Modes

Interface Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command resets the allowed VLAN list to its default state:

```
Switch(config-if)# no switchport hybrid allowed vlan
```

switchport hybrid egress-tagged vlan

Sets the egress traffic type to tagged for specific VLANs.

Syntax

`switchport hybrid egress-tagged vlan` *`<VLAN_LIST>`*

where:

Parameter	Description
VLAN LIST	The list of VLANs to use tagged egress traffic. The default is untagged VLAN traffic.

Using **no** before the command removes the egress traffic type from tagged for specific VLANs.

Modes

Interface Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command sets the egress traffic type to tagged for specific VLANs:

```
Switch(config-if)# switchport hybrid egress-tagged vlan 5
```

switchport mode

Configures the switchport mode for the current interface.

Syntax

`[no] switchport mode {access|dot1q-tunnel|hybrid|trunk}`

where:

Parameter	Description
`access`	Configures switchport mode to port mode access for the interface.
`dot1q-tunnel`	Configures switchport mode to port mode PVID Ingress Tagging for the interface.
`hybrid`	Configures switchport to function in hybrid mode.
`trunk`	Configures switchport mode to port mode trunk for the interface.

Using **no** before the command with all but the last argument restores the trunking characteristics to default when interface is in trunk mode.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **hybrid** option.

Example

The following command sets switchport mode to port mode access for the interface:

```
Switch(config-if)# switchport mode access
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport mode dot1q-tunnel

Enables or disables PVID Ingress Tagging on a switch port.

By default, PVID Ingress Tagging is disabled.

Syntax

```
[no] switchport mode dot1q-tunnel
```

Modes

Interface Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables PVID Ingress Tagging:

```
Switch(config-if)# switchport mode dot1q-tunnel
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport trunk allowed vlan

Sets the list of allowed VLANs in switchport trunk mode for the interface.

Syntax

[no] switchport trunk allowed vlan *<VLAN ID>*

where:

Parameter	Description
VLAN ID	The list of allowed VLANs for the interface when this port is in trunk mode.

Using **no** before the command with all but the last argument clears all VLANs from the list of allowed VLANs when this port is in trunk mode.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the list of allowed VLANs in switchport trunk mode to 1-3 for the interface:

```
Switch(config-if)# switchport trunk allowed vlan 1-3
```

Restrictions

The switch must be in trunk mode for this command to work.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport trunk allowed vlan add

Adds VLANs to the list of allowed VLANs in switchport trunk mode for the interface.

Syntax

switchport trunk allowed vlan add *<VLANs>*

where:

Parameter	Description
VLANs	The list of VLANs added to allowed VLANs for the interface when this port is in trunk mode.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds VLANs 4-6 to the list of allowed VLANs in switchport trunk mode for the interface:

```
Switch(config-if)# switchport trunk allowed vlan add 4-6
```

Restrictions

The switch must be in trunk mode for this command to work.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport trunk allowed vlan all

Adds all VLANs to the list of allowed VLANs in switchport trunk mode for the interface.

Syntax

```
switchport trunk allowed vlan all
```

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds all VLANs to the list of allowed VLANs in switchport trunk mode for the interface:

```
Switch(config-if)# switchport trunk allowed vlan all
```

Restrictions

The switch must be in trunk mode for this command to work.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport trunk allowed vlan except

Adds all VLANs *except* for the specified VLANs to the list of allowed VLANs in switchport trunk mode for the interface.

Syntax

`switchport trunk allowed vlan except` *`<VLANs>`*

where:

Parameter	Description
VLANs	The list of VLANs that are not part of allowed VLANs for the interface when this port is in trunk mode.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds all VLANs except 4-6 to the list of allowed VLANs in switchport trunk mode for the interface:

```
Switch(config-if)# switchport trunk allowed vlan except 4-6
```

Restrictions

The switch must be in trunk mode for this command to work.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport trunk allowed vlan none

Allows no VLANs in switchport trunk mode for the interface.

Syntax

switchport trunk allowed vlan none

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command allows no VLANs in switchport trunk mode for the interface:

```
Switch(config-if)# switchport trunk allowed vlan none
```

Restrictions

The switch must be in trunk mode for this command to work.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

switchport trunk allowed vlan remove

Removes the specified VLANs from the list of allowed VLANs in switchport trunk mode for the interface.

Syntax

switchport trunk allowed vlan remove *<VLANs>*

where:

Parameter	Description
VLANs	The list of VLANs that are removed from allowed VLANs for the interface when this interface is in trunk mode.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command removes VLANs 4-6 from the list of allowed VLANs in switchport trunk mode for the interface:

```
Switch(config-if)# switchport trunk allowed vlan remove 4-6
```

Restrictions

The switch must be in trunk mode for this command to work.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

cee dcbx enable

Enables or disables the Data Center Bridging eXchange (DCBX) protocol on the current switch interface.

By default, the DCBX protocol in enabled on all the interfaces of the switch.

Syntax

[no] cee dcbx enable

Using **no** before the command disables the DCBX protocol on the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables the DCBX protocol on ethernet port 1/12:

```
Switch(config-if)# cee dcbx enable
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

cee dcbx advertise

Enables or disables the advertisement of the local application protocol, Enhanced Transmission Selection (ETS), or Priority Flow Control (PFC) configuration to the switch's Data Center Bridging eXchange (DCBX) peer.

This command is interface-based.

By default, the switch will advertise to its DCBX peer the local application protocol, ETS, and PFS configurations.

Syntax

[no] cee dcbx [app-proto|ets|pfc] advertise

where:

Parameter	Description
app-proto	Configures the advertisement of the local application protocol configuration to the switch's DCBX peer.
ets	Configures the advertisement of the local ETS configuration to the switch's DCBX peer.
pfc	Configures the advertisement of the local PFC configuration to the switch's DCBX peer.

Using **no** before the command disables the advertisement of the local application protocol, ETS, or PFC configuration the switch's DCBX peer.

Modes

Interface Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command enables the advertisement of the local ETS configuration on interface 1/12:

```
Switch(config-if)# cee dcbx ets advertise
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

cee pfc enable

Enables or disables Priority Flow Control (PFC) on the current switch interface.

By default, PFC is enabled on all the interfaces of the switch.

Note: By default, PFC is globally disabled on the switch. PFC will not function on the interface until PFC is also globally enabled.

Syntax

[no] cee pfc enable

Using **no** before the command disables PFC.

Modes

Interface Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command will disable PFC on the interface:

```
Switch(config-if)# no cee pfc enable
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

Related Commands

Command	Description
cee pfc enable	Globally enable or disable PFC.

description

Sets the interface description.

Syntax

[no] **description** *<description>*

where:

Parameter	Description
<description>	Interface description (string up to 80 characters long).

Using **no** before the command with no other arguments removes the description.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the interface description to "my interface":

```
Switch(config-if)# description my interface
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

duplex

Sets the duplex mode for the interface.

The default duplex mode is auto-negotiate.

Syntax

[no] **duplex** {**auto**|**full**|**half**}

where:

Parameter	Description
auto	Auto-negotiate.
full	Full-duplex.
half	Half-duplex.

Using **no** before the command resets the duplex mode to the default setting.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the duplex mode to auto-negotiate:

```
Switch(config-if)# duplex auto
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

fec

Configures the Forwarding Error Correction (FEC) for the current interface.

By default, FEC is automatically configured by the switch.

Note: This command is available only on the NE10032 and NE2572.

Syntax

`fec {auto|cl74|cl91|off}`

where:

Parameter	Description
`auto`	Enables and configures FEC automatically based on the port speed of the interface: ● clause 74 for 25 Gb/s and 50 Gb/s port speeds ● clause 91 for 100 Gb/s port speed ● off for 40 Gb/s port speed
`cl74`	Enables FEC with clause 74 for interfaces configured with 25 Gb/s, 40 Gb/s, or 50 Gb/s port speeds.
`cl91`	Enables FEC with clause 91 for interfaces configured with 100 Gb/s port speeds.
`off`	Disables FEC on the interface.

To reset FEC to its default value, use the following command:

`no fec`

Modes

Interface Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command disables FEC on the current interface:

```
Switch(config-if)# no fec
```

flowcontrol

Turns IEEE 802.3x flow control on or off.

Syntax

[no] **flowcontrol** {**receive**|**send**} {**on**|**off**}

where:

Parameter	Description
receive on|**off**	Set flow control on receive.
send on|**off**	Set flow control on send.

Using **no** before the command with no other arguments turns off flow control.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command turns on flow control on send.

```
Switch(config-if)# flowcontrol send on
```

Restrictions

You cannot set flow control for both send and receive on the same line.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip access-group

Applies IPv4 port ACLs on physical routed ports or on L3 VLAN interfaces (SVIs).

Syntax

[**no**] **ip access-group** *<group name>* {**in**|**out**}
[apply-routed-packets-only]

where:

Parameter	Description
group name	The name of the access group.
in	Inbound packets.
out	Outbound packets.
apply-routed-packets-only	Only match those IPv4 packets that are routed in the specified VLAN by the IPv4 ACLs already applied on L3 VLAN interfaces. **Note:** Applicable only when applying IP ACLs on SVIs.

Using **no** before the command with no other arguments turns off access control for the specified direction.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **apply-routed-packets-onl**y option.

Example

The following command sets access control for inbound packets for the group MyAccessGroup.

```
Switch(config-if)# ip access-group MyAccessGroup in
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip address

Sets the IP address for an interface.

Syntax

[**no**] **ip address** {*<IPv4 address>* *<IPv4 mask>*|*<IPv4 address>***/***<mask>*}
[**secondary**]

where:

Parameter	Description
IPv4 address	IPv4 address (*n.n.n.n*).
IPv4 mask	IPv4 address/mask(n.n.n.n/m).
mask	Mask number (maximum value of 32).
secondary	Set this as a secondary IP address for the interface.

Using **no** before the command with no other arguments removes the IP address from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets 10.2.4.3 with a bitmask of 255.255.255.0 as the primary IP address for the interface:

```
Switch(config-if)# ip address 10.2.4.3 255.255.255.0
```

The following command sets 10.2.4.33 with a mask of 22 as a secondary IP address for the interface:

```
Switch(config-if)# ip address 10.2.4.33/22 secondary
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip address dhcp

Sets the interface to use Dynamic Host Configuration Protocol (DHCP).

Syntax

[no] ip address dhcp

Using **no** before the command unsets DHCP from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the interface to use DHCP:

```
Switch(config-if)# ip address dhcp
```

Restrictions

DHCP client service can not be enabled or disabled on a switchport.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip dhcp client class-id

Configures Dynamic Host Configuration Protocol (DHCP) client vendor class identifier (VCI) for the current interface.

Syntax

[no] ip dhcp client class-id *<VCI>*

where:

Parameter	Description
VCI	The vendor class identifier name.

To remove the configured VCI, use the following command:

no ip dhcp client class-id

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the DHCP client class identifier to R2D2:

```
Switch(config-if)# ip dhcp client class-id R2D2
```

ip dhcp client request

Configures the interface Dynamic Host Configuration Protocol (DHCP) client request settings.

Syntax

```
[no] ip dhcp client request {startupfile-name|dns-nameserver|
host-name|log-server|ntp-server|tftp-server-name}
```

where:

Parameter	Description
`startupfile-name`	Requests the startup file name (option 67).
`dns-nameserver`	Requests the DNS server name (option 6).
`host-name`	Requests the host name (option 12).
`log-server`	Requests the log server name (option 7).
`ntp-server`	Requests the NTP server name (option 42).
`tftp-server-name`	Requests the TFTP server name (option 66).

Note: Zero Touch Provisioning (ZTP) mode needs both `tftp-server-name` and `startupfile-name` options enabled.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.2	ZTP mode prerequisites were added.

Example

The following command configures the DHCP client to request the name of the DNS server (option 6):

```
Switch(config-if)# ip dhcp client request dns-nameserver
```

Restrictions

DHCP client service cannot be enabled or disabled on a switchport.

ip dhcp relay

Sets the interface Dynamic Host Configuration Protocol (DHCP) relay IP address.

Syntax

[no] ip dhcp relay address *<IPv4 address>*

where:

Parameter	Description
IPv4 address	IPv4 address (*n.n.n.n*).

Using **no** before the command removes the specified DHCP relay address from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the DHCP relay address to 10.3.23.3:

```
Switch(config-if)# ip dhcp relay address 10.3.23.3
```

Restrictions

DHCP relay addresses cannot be enabled or disabled on a switchport.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip dhcp snooping trust

Enables or disables the current interface to act as a Dynamic Host Configuration Protocol (DHCP) Snooping trusted port. A trusted port is an interface connected to a legitimate DHCP server.

The switch will discard DHCPOFFER, DHCPACK, DHCPNAK, or DHCPLEASEQUERY packets received from untrusted ports, assuming that no legitimate server is found there.

By default, all switch interfaces are configured as untrusted ports.

Syntax

[no] ip dhcp snooping trust

Modes

Interface Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command configures the current interface as a DHCP Snooping trusted port:

```
Switch(config-if)# ip dhcp snooping trust
```

ip ospf

Sets the interface Open Shortest Path First (OSPF) LSA outbound filter for the specified address.

Syntax

ip ospf *<IPv4 address>* **database-filter all out**

no ip ospf *<IPv4 address>* **database-filter all**

where:

Parameter	Description
IPv4 address	IPv4 address (*n.n.n.n*).
database-filter	Filter OSPF link-state advertisements (LSAs) during synchronization and flooding.
all	Filter all OSPF link-state advertisements (LSAs).
out	Filter all outbound OSPF link-state advertisements (LSAs).

Using **no** before the command with all but the **out** argument removes the OSPF filter from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF outbound LSA filter for IP address 10.2.3.22:

```
Switch(config-if)# ip ospf 10.2.3.22 database-filter all out
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf authentication

Sets the interface Open Shortest Path First (OSPF) authentication scheme.

Syntax

[no] ip ospf authentication {message-digest|null}

where:

Parameter	Description
message-digest	Use message-digest authentication.
null	Use no authentication.

Using **no** before the command with no argument removes OSPF authentication from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets OSPF message-digest authentication:

```
Switch(config-if)# ip ospf authentication message-digest
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf authentication-key

Sets the interface Open Shortest Path First (OSPF) authentication key.

Syntax

[no] ip ospf authentication-key [0] *<OSPF password>*

where:

Parameter	Description
0	Do not encrypt the authentication key.
OSPF password	The authentication key; a text string.

Using **no** before the command with no argument removes the OSPF authentication key from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF authentication key to Authkey and stores it in encrypted format:

```
Switch(config-if)# ip ospf authentication-key Authkey
```

Restrictions

The **no** form of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf bfd

Enables or disables Open Shortest Path First (OSPF) Bidirectional Forwarding Detection (BFD) for this interface.

Syntax

`[no] ip ospf bfd [disable]`

where:

Parameter	Description
`disable`	Disables Bidirectional Forwarding Detection for this interface.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables OSPF Bidirectional Forwarding Detection:

```
Switch(config-if)# ip ospf bfd
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf cost

Sets the Open Shortest Path First (OSPF) cost for this interface.

Syntax

[no] ip ospf cost *<cost>*

where:

Parameter	Description
cost	The OSPF cost; an integer from 1-65535.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF cost to 333:

```
Switch(config-if)# ip ospf cost 333
```

Restrictions

The **no** form of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf database-filter

Configures the local router to suppress all LSAs going out this interface during synchronization and flooding.

Syntax

ip ospf database-filter all out

no ip ospf database-filter all

where:

Parameter	Description
database-filter	Filter OSPF link-state advertisements (LSAs) during synchronization and flooding.
all	Filter all OSPF link-state advertisements (LSAs).
out	Filter all outbound OSPF link-state advertisements (LSAs).

Using **no** before the command with all but the **out** argument removes the OSPF filter from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the OSPF outbound LSA filter:

```
Switch(config-if)# ip ospf database-filter all out
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf dead-interval

Sets the interface Open Shortest Path First (OSPF) interval in seconds after which a neighbor is declared "dead."

Syntax

[no] ip ospf dead interval *<seconds>*

where:

Parameter	Description
seconds	Timeout value in seconds; an integer from 1-65535.

Using **no** before the command with all but the last argument removes the OSPF dead-interval timeout from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF dead-interval timeout to 600 seconds (10 minutes):

```
Switch(config-if)# ip ospf dead-interval 600
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf hello-interval

Sets the time between transmission of "hello" packets in seconds for Open Shortest Path First (OSPF) for the interface.

Syntax

[no] ip ospf hello interval *<seconds>*

where:

Parameter	Description
seconds	Timeout value in seconds; an integer from 1-65535.

Using **no** before the command with all but the last argument removes the OSPF hello transmission interval time from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF hello-interval transmission interval to 600 seconds (10 minutes):

```
Switch(config-if)# ip ospf hello-interval 600
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf message-digest-key

Sets the interface Open Shortest Path First (OSPF) message digest authentication key.

Syntax

[no] ip ospf message-digest-key *<key ID>* **[0]** *<OSPF password>*

where:

Parameter	Description
key ID	The message digest key ID; an integer from 1-255.
0	Do not encrypt the authentication key.
OSPF password	The authentication key; a text string.

Using **no** before the command with no argument removes the OSPF message digest key from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF message digest key ID to 33, sets the key to Authkey, and stores it in encrypted format:

```
Switch(config-if)# ip ospf message-digest-key 33 Authkey
```

Restrictions

The **no** form of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf mtu

Sets the interface Open Shortest Path First (OSPF) Maximum Transmission Unit (MTU) size in bytes.

Syntax

[no] ip ospf mtu *<size>*

where:

Parameter	Description
size	The MTU size, in bytes; an integer from 576-65535.

Using **no** before the command with no argument removes the OSPF MTU from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF MTU to 50000 bytes:

```
Switch(config-if)# ip ospf mtu 50000
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf mtu-ignore

Sets the interface to ignore the Open Shortest Path First (OSPF) Maximum Transmission Unit (MTU) size when dealing with database descriptor (DBD) packets.

Syntax

[no] **ip ospf mtu-ignore**

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command tells the interface to ignore the OSPF MTU in DBD packets:

```
Switch(config-if)# ip ospf mtu-ignore
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf network

Sets the Open Shortest Path First (OSPF) network type.

Syntax

[no] **ip ospf network** {**broadcast**|**point-to-point**}

where:

Parameter	Description
broadcast	OSPF broadcast multi-access network.
point-to-point	OSPF point-to-point network.

Using **no** before the command removes the OSPF network type.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF network type to broadcast:

```
Switch(config-if)# ip ospf network broadcast
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf passive-interface

Suppress routing updates on this interface.

Syntax

[no] `ip ospf passive-interface`

Using **no** before the command enables routing updates on this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command suppresses routing updates on this interface:

```
Switch(config-if)# ip ospf passive-interface
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf priority

Sets the Open Shortest Path First (OSPF) router priority used in DR/BDR election process.

Syntax

[**no**] **ip ospf priority** *<priority>*

where:

Parameter	Description
priority	OSPF router priority; an integer from 0-255.

Using **no** before the command removes the OSPF priority.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF router priority to 10:

```
Switch(config-if)# ip ospf priority 10
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf retransmit-interval

Sets the Open Shortest Path First (OSPF) time, in seconds, between retransmission of lost link state advertisements.

Syntax

[no] **ip ospf retransmit-interval** *<retransmit interval>*

where:

Parameter	Description
retransmit interval	Time, in seconds, between retransmission of lost link state advertisements; an integer from 1-65535. The default value is 5.

Using **no** before the command removes the retransmisison interval.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF retransmission interval to 10:

```
Switch(config-if)# ip ospf retransmit-interval 10
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf shutdown

Shut down OSPF on this interface.

Syntax

[no] **ip ospf shutdown**

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command shuts down OSPF on this interface:

```
Switch(config-if)# ip ospf shutdown
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip ospf transmit-delay

Sets the Open Shortest Path First (OSPF) link state transmit delay in seconds.

Syntax

[no] ip ospf transmit-delay *<transmit delay>*

where:

Parameter	Description
transmit delay	Time, in seconds, between when the link state changes and the information is transmitted; an integer from 1-3600 (one hour). The default value is 1

Using **no** before the command removes the link state transmit delay.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the OSPF link state transmit delay to 10:

```
Switch(config-if)# ip ospf transmit-delay 10
```

Restrictions

The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip port

Configures port policies.

Syntax

[no] ip port access-group *<list name>* **in**

where:

Parameter	Description
access-group	Specifies access control for packets.
list name	List of packets.
in	Inbound packets.

Using **no** before the command turns off the feature.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures port policies:

```
Switch(config-if)# ip port access-group aaaa in
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip port-unreachable

Enables sending ICMP port-unreachable.

Syntax

[no] ip port-unreachable

Using **no** before the command turns off the feature.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables sending ICMP port-unreachables:

```
Switch(config-if)# ip port-unreachable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip proxy-arp

Enables or disables Proxy ARP for the given interface.

By default, Proxy ARP is disabled.

Syntax

```
[no] ip proxy-arp
```

Modes

Interface Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables Proxy ARP

```
Switch(config-if)# ip proxy-arp
```

ip redirects

Enables sending ICMP redirect messages.

Syntax

[no] ip redirects

Using **no** before the command turns off the feature.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables sending ICMP redirect messages:

```
Switch(config-if)# ip redirects
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip router ospf

Enables a routing process.

Syntax

[no] ip router ospf O {area|multi-area} {_<decimal value>_**|**_<IP address>_**}**

where:

Parameter	Description
area	Sets an OSPF area ID.
multi-area	Sets an OSPF multi-area-adjacency.
decimal value	Area ID as a decimal value (a number from 0 to 4294967295).
IP address	Area ID as an IP address.

Using **no** before the command turns off the feature.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets an OSPF routing process:

```
Switch(config-if)# ip router ospf 0 area 500
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ip unreachables

Enables sending ICMP unreachables (others than port-unreachable).

Syntax

`[no] ip unreachables`

Using **no** before the command turns off the feature.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables sending ICMP unreachables:

```
Switch(config-if)# ip unreachable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 address

Sets the IPv6 address for an interface.

Syntax

[no] ipv6 address {<*IPv6 address*>**/**<*mask*>**} [anycast] [secondary]**

where:

Parameter	Description
IPv6 address	IPv6 address (*aaaa:bbbb::cccc:dddd*).
mask	Network mask.
anycast	Set this as an anycast IP address for the interface.
secondary	Set this as a secondary IP address for the interface.

Using **no** before the command with no other arguments removes the IPv6 address from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Examples

The following command sets 2001:0db8:85a3:0000:0000:8a2e:0370:7334 with a mask of 22 as the primary IPv6 address for the interface:

```
Switch(config-if)# ipv6 address
2001:0db8:85a3:0000:0000:8a2e:0370:7334/22
```

The following command sets 2001:0db8:85a3:0000:0000:8a2e:0370:7334 with a mask of 22 as a secondary IP address for the interface:

```
Switch(config-if)# ipv6 address
2001:0db8:85a3:0000:0000:8a2e:0370:7334/22 secondary
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.

- The "no" version of this command does not work in a nested configuration mode.

ipv6 address dhcp

Sets the IPv6 address to use Dynamic Host Configuration Protocol (DHCP).

Syntax

[no] **ipv6 address dhcp**

Using **no** before the command with no other arguments removes DHCP from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the interface to use DHCP:

```
Switch(config-if)# ipv6 address dhcp
```

Restrictions

● IPv6 commands do not work on LAG or ethernet interfaces.

● The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 dhcp relay

Sets the interface Dynamic Host Configuration Protocol (DHCP) relay IPv6 address.

Syntax

[no] **ipv6 dhcp relay address** *<IPv6 address>* **[interface {ethernet** *<chassis number>***|vlan** *<vlan interface>***}]**

where:

Parameter	Description
IPv6 address	IPv6 address (*n:n::n:n*).
interface	Sets outgoing interface parameters.
ethernet *<chassis number>*	Ethernet interface number.
vlan *<vlan interface>*	VLAN interface number (a number from 1 to 4094).

Using **no** before the command removes the specified DHCP relay address from this interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the DHCP relay address to
2001:0db8:85a3:0000:0000:8a2e:0370:7334:

```
Switch(config-if)# ipv6 dhcp relay address
2001:0db8:85a3:0000:0000:8a2e:0370:7334
```

Restrictions

● DHCP relay addresses cannot be enabled or disabled on a switchport.

● IPv6 commands do not work on LAG or ethernet interfaces.

● The "no" version of this command does not work in a nested configuration mode.

ipv6 link-local

Sets the IPv6 link local address.

Syntax

[no] **ipv6 address link-local** *<IPv6 address>*

where:

Parameter	Description
IPv6 address	IPv6 address (*n:n::n:n*).

Using **no** before the command with no other arguments removes the link-local address from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the link-local address to `aaaa:bbbb::dddd:ffff`:

```
Switch(config-if)# ipv6 address link-local aaaa:bbbb::dddd:ffff
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd dad attempts

Sets the IPv6 neighbor discovery Duplicate Address Detection (DAD) attempts.

Syntax

[no] **ipv6 nd dad attempts** *<DAD attempts>*

where:

Parameter	Description
DAD attempts	Number of DAD attempts available; an integer from 0-600. Default value is 1.

Using **no** before the command restores the default value.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the number of DAD attempts to 3:

```
Switch(config-if)# ipv6 nd attempts 3
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd hop-limit

Sets the IPv6 neighbor discovery hop limit to use in router advertisement (RA) messages when originating IPv6 packets.

Syntax

[**no**] **ipv6 nd hop-limit** *<number of hops>*

where:

Parameter	Description
number of hops	Maximum number of hops to use in an RA message; an integer from 0-255. Default value is 64.

Using **no** before the command with no other arguments removes the hop limit from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the hop limit to 30:

```
Switch(config-if)# ipv6 nd hop-limit 30
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd managed-config-flag

In IPv6 neighbor discovery router advertisement (RA) messages, tells the host to use DHCP for address configuration.

Syntax

[no] `ipv6 nd managed-config-flag`

Using **no** before the command with no other arguments negates the command.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command tells the host to use DHCP for address configuration:

```
Switch(config-if)# ipv6 nd managed-config-flag
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd mtu

Sets the IPv6 neighbor discovery advertised Maximum Transmission Unit (MTU) option.

Syntax

[no] **ipv6 nd mtu** *<link MTU value>*

where:

Parameter	Description
link MTU value	Maximum transmission unit size, in bytes; an integer from 1280-65535. Default value is 1500.

Using **no** before the command with no other arguments removes the MTU option from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the MTU size to 30000:

```
Switch(config-if)# ipv6 nd mtu 30000
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd other-config-flag

Sets IPv6 neighbor discovery to use DHCP for non-address configuration.

Syntax

[no] **ipv6 nd other-config-flag**

Using **no** before the command with no other arguments sets the IPv6 neighbor discovery to not use DHCP for non-address configuration on the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets IPv6 neighbor discovery to use DHCP for non-address configuration:

```
Switch(config-if)# ipv6 nd other-config-flag
```

Restrictions

● IPv6 commands do not work on LAG or ethernet interfaces.

● The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd prefix

Sets the interface IPv6 neighbor discovery prefix parameters.

Syntax

[no] **ipv6 nd prefix [{**_<valid-lifetime>_ **| infinite} {**_<preferred-lifetime>_**| infinite}] [no-advertise][no-autoconfig][no-onlink][off-link]**

where:

Parameter	Description
IPv6 address	IPv6 address (_n:n::n:n_).
mask	Mask.
default	Set the default prefix parameters.
valid-lifetime	Valid lifetime, in seconds. Default value is 2592000.
preferred-lifetime	Preferred lifetime, in seconds. Default value is 604800.
infinite	Set an indefinite valid or preferred lifetime.
no-advertise	Do not advertise the prefix.
no-autoconfig	Do not use this prefix for autoconfiguration.
no-onlink	Use this prefix for offlink determination.
off-link	Do not use this prefix for onlink determination.

Using **no** before the command with no other arguments removes prefix from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the ND prefix to
2001:0db8:85a3:0000:0000:8a2e:0370:7334/38 with a lifetime of 60000 seconds, with no advertising, no autoconfiguration, offlink determination, and no onlink determination:

```
Switch(config-if)# ipv6 nd prefix
2001:0db8:85a3:0000:0000:8a2e:0370:7334/38 60000 no-onlink off-link
no-autoconfig
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.

- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd ra-interval

Sets the interface IPv6 neighbor discovery Route Advertisement interval.

Syntax

[no] **ipv6 nd ra-interval** *<interval>*

where:

Parameter	Description
interval	The interval, in seconds, between sending RA messages; an integer from 4-1800. Default value is 600.

Using **no** before the command with no other arguments removes the RA interval from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the ND RA interval to 1200 seconds:

```
Switch(config-if)# ipv6 nd ra-interval 1200
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd ra-lifetime

Sets the interface IPv6 neighbor discovery Route Advertisement lifetime of a default router.

Syntax

[no] **ipv6 nd ra-lifetime** *<lifetime>*

where:

Parameter	Description
lifetime	The lifetime, in seconds, of a default router; an integer from 0-9000. Default value is 1800; a value of 0 means this is not the default router.

Using **no** before the command with no other arguments removes the RA lifetime from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the ND RA lifetime to 3600 seconds:

```
Switch(config-if)# ipv6 nd ra-lifetime 3600
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd reachable-time

Sets the interface IPv6 neighbor discovery advertised time when a node considers a neighbor to be up.

Syntax

[no] **ipv6 nd reachable-time** *<time>*

where:

Parameter	Description
time	The time, in milliseconds, sent via an RA message that determines when a node considers a neighbor to be up; an integer from 0-3600000. Default value is 0.

Using **no** before the command with no other arguments removes the reachable time from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the ND reachable time to 3600 milliseconds:

```
Switch(config-if)# ipv6 nd reachable-time 3600
```

Restrictions

● IPv6 commands do not work on LAG or ethernet interfaces.

● The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd retrans-timer

Sets the interface IPv6 neighbor discovery advertised retransmission timer.

Syntax

[no] **ipv6 nd retrans-timer** *<time>*

where:

Parameter	Description
time	The time, in milliseconds, between advertised retransmissions; an integer from 0-4294967295. Default value is 0.

Using **no** before the command with no other arguments removes the advertised retransmission timer from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the ND advertised retransmission timer to 6000 milliseconds:

```
Switch(config-if)# ipv6 nd retrans-timer 6000
```

Restrictions

- IPv6 commands do not work on LAG or ethernet interfaces.
- The "no" version of this command does not work in a nested configuration mode.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 nd suppress-ra

Sets the interface IPv6 neighbor discovery to suppress Router Advertisement messages.

Syntax

[no] **ipv6 nd suppress-ra [mtu**]

where:

Parameter	Description
mtu	Disables sending the MTU in Router Advertisement messages.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables sending MTU in ND router advertisement messages:

```
Switch(config-if)# ipv6 nd suppress-ra mtu
```

Restrictions

IPv6 commands do not work on LAG or ethernet interfaces.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

ipv6 neighbor

Sets the interface IPv6 neighbor.

Syntax

[**no**] **ipv6 neighbor** *<IPv6 address> <MAC address>*

where:

Parameter	Description
IPv6 address	IPv6 address (*n:n::n:n*).
MAC address	MAC address (*NNNN.NNNN.NNNN)*

Using **no** before the command removes the neighbor.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the IPv6 neighbor to
2001:0db8:85a3:0000:0000:8a2e:0370:7334 with a MAC of AAAA.BBBB.CCCC:

```
Switch(config-if)# ipv6 neighbor 2001:0db8:85a3:0000:0000:8a2e:0370:7334
AAAA.BBBB.CCCC
```

Restrictions

● The neighbor must be on the local interface subnet.

● IPv6 commands do not work on LAG or ethernet interfaces.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lacp min-links

Configures the minimum number of Link Aggregation Control Protocol (LACP) links. The minimum number of LACP links is the minimum number of Link Aggregation Group (LAG) member ports that must be in the link-up state and aggregated into the LAG for the interface to forward traffic. If the number of LAG member ports that are in the link-up state and aggregated into the LAG is smaller than the configured minimum number of LACP links, then the LAG member ports will transition into the standby state. Interfaces in the standby state will continue running LACP, but will not forward traffic.

By default, the minimum number of LACP links is one.

Syntax

lacp min-links *<number of minimum LACP links>*

where:

Parameter	Description
number of minimum LACP links	The *number of minimum LACP links* is from 1 to 32.

The following command resets the minimum number of LACP links to its default value:

no lacp min-links

Modes

Interface Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command configures the minimum number of LACP links to 6:

```
Switch(config-if)# lacp min-links 6
```

Restrictions

This command only works on LAGs and will only work when the LAG is an LACP port aggregation.

lacp port-priority

Configures the Link Aggregation Control Protocol (LACP) priority for the current interface.

By default, the LACP priority of an interface has a value of 32768.

Syntax

`lacp port-priority` *<LACP priority>*

where:

Parameter	Description
LACP priority	The LACP priority for the current interface. The *LACP priority* is from 1 to 65535.

The following command resets the LACP priority of the current interface to its default value:

`no lacp port-priority`

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the LACP port priority to 28000:

```
Switch(config-if)# lacp port-priority 28000
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lacp suspend-individual

Sets the interface Link Aggregation Control Protocol (LACP) port into a suspended state instead of an individual state if it does not get the LACP BPDU from the peer ports in the LAG.

Syntax

[no] **lacp suspend-individual**

Using **no** before the command removes the LACP port suspend-individual flag.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the LACP port suspend-individual flag:

```
Switch(config-if)# lacp suspend-individual
```

Restrictions

This command only works on LAGs.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lacp timeout

Configures the interface Link Aggregation Control Protocol (LACP) timeout. If the configured timeout interval expires and the switch did not receive any LACP Data Units (LACPDUs), the LACP interface times out. The peer LACP interface then sends LACPDUs at a third of the value of the configured LACP timeout interval.

By default, the timeout interval is long (90 seconds).

Syntax

[no] lacp timeout {long|short}

where:

Parameter	Description
long	Configures the LACP timeout interval to 90 seconds. After the interface times out, the peer LACP interface will send LACPDUs every 30 seconds.
short	Configures the LACP timeout interval to 3 seconds. After the interface times out, the peer LACP interface will send LACPDUs every second.

The following command resets the LACP timeout interval to its default value:

no lacp timeout

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the LACP timeout to short (3 seconds):

```
Switch(config-if)# lacp timeout short
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lldp receive

Enables Link Layer Discovery Protocol (LLDP) reception on the interface

Syntax

[no] **lldp receive**

Using **no** before the command disables LLDP reception on interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables LLDP reception on the interface:

```
Switch(config-if)# lldp receive
```

Restrictions

LLDP must be supported on the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lldp tlv-select

Sets the optional Link Layer Discovery Protocol (LLDP) TLV (type-length-value) to be included in outgoing LLDP messages, along with the mandatory attributes.

Syntax

[**no**] **lldp tlv-select** *<TLV type>*

where *TLV type* is one of the following:

Parameter	Description
link-aggregation	Link Aggregation TLV
mac-phy-status	MAC/PHY Configuration/Status TLV
management-address	Management Address TLV (set by default).
max-frame-size	Maximum Frame Size TLV
port-description	Port Description TLV (set by default).
port-protocol-vlan	Port and Protocol VLAN ID TLV
port-vlan	Port VLAN ID TLV (set by default).
power-mdi	Power Via MDI TLV
protocol-identity	Protocol Identity TLV
system-capabilities	System Capabilities TLV (set by default).
system-description	System Description TLV (set by default).
system-name	System Name TLV (set by default).
vid-management	Vid Management TLV
vlan-name	VLAN Name TLV

Using **no** before the command removes the optional LLDP TLV from the outgoing LLDP messages.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the LLDP TLV type to be a port description:

```
Switch(config-if)# lldp tlv-select port-description
```

Restrictions

LLDP must be supported on the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lldp transmit

Enables Link Layer Discovery Protocol (LLDP) transmission on the interface

Syntax

[no] **lldp transmit**

Using **no** before the command disables the Link Layer Discovery Protocol (LLDP) transmission on the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables LLDP transmission on the interface:

```
Switch(config-if)# lldp transmit
```

Restrictions

LLDP must be supported on the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

lldp trap-notification

Enables Link Layer Discovery Protocol (LLDP) trap-notification on the interface

Syntax

[no] **lldp trap-notification**

Using **no** before the command disables trap notification on the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables LLDP trap-notification on the interface:

```
Switch(config-if)# lldp trap-notification
```

Restrictions

LLDP must be supported on the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

load-interval

Sets the interface load-interval delay.

Syntax

[no] load-interval [**counter** *<counter>*] *<delay>*

where:

Parameter	Description
counter	Specify a counter for this load interval (optional).
counter	The counter for the load interval; an integer from 1-3.
delay	The load interval delay, in seconds; an integer from 30-300. The default values for each counter are the following: ● 1: 30 seconds; ● 2: 300 seconds; ● 3: not configured.

Using **no** before the command with no *delay* argument removes the load-interval delay.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the load-interval delay for counter 2 to 90 seconds:

```
Switch(config-if)# load-interval counter 2 90
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

mac port access-group

Sets the MAC port Access Group (AG) name.

Syntax

[no] **mac port access-group** *<name>*

where:

Parameter	Description
name	The name of the MAC access group.

Using **no** before the command removes the MAC port AG name.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the the MAC port AG name to MyAG:

```
Switch(config-if)# mac port access-group MyAG
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

mac-learn disable

Disables MAC learning to use the switch as a HUB.

Syntax

[no] **mac-learn disable**

Using **no** before the command enables MAC learning.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables MAC learning:

```
Switch(config-if)# mac-learn disable
```

Restrictions

This command does not work on a VLAN interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

microburst-detection enable

Enables microburst detection on the interface.

Syntax

microburst-detection enable threshold *<threshold>*

no microburst-detection enable

where:

Parameter	Description
threshold	The threshold in unit of buffer cell (208 bytes).

Using **no** before the command without a threshold disables microburst-detection.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables microburst detection with a threshold of 200:

```
Switch(config-if)# microburst-detection enable threshold 200
```

Restrictions

The interface must support microburst detection.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

mtu

Sets the Maximum Transmission Unit (MTU) on the interface.

Syntax

[**no**] **mtu** *<MTU>*

where:

Parameter	Description

MTU	In bytes, the MTU:
	● L2 packet: An integer from 64-9216
	● L3 IPv4 packet:
	  – G8272, G8296, G8332: An integer from 576-9216
	  – NE1072T, NE1032, NE1032T, NE10032, NE2572: An integer from 576-9198
	● L3 IPv6 packet:
	  – G8272, G8296, G8332: An integer from 1280-9216
	  – NE1072T, NE1032, NE1032T, NE10032, NE2572: An integer from 1280-9198.

Using **no** before the command without an argument removes the MTU.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the MTU to 1000:

```
Switch(config-if)# mtu 1000
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

service

Enter Ethernet Virtual Connection (EVC) service configuration mode on the interface. For full information on the subcommands, see Chapter 31, "EVC Service Mode Commands."

Syntax

service instance *<Instance ID>* **evc-id** *<EVC ID>*

where:

Parameter	Description
Instance ID	The instance ID to map to the EVC
EVC ID	The EVC ID of the SVLAN.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters EVC service configuration mode with instance ID 1 and EVC ID 1:

```
Switch(config-if)# service instance 1 evc-id 1
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

service-policy copp-system-policy

Attaches the specified Control Plane Policing (CoPP) service policy to the interface.

Syntax

[no] **service-policy copp-system-policy class** {<*COPP class*>|**all**}

where:

Parameter	Description
COPP class	The COPP class name to attach
all	Attach all COPP classes..

Using **no** before the command detaches the COPP class.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command attaches COPP class MyClass to the interface:

```
Switch(config-if)# service-policy copp-system-policy class MyClass
```

The following command attaches all COPP classes to the interface:

```
Switch(config-if)# service-policy copp-system-policy class all
```

Restrictions

This command only works on Ethernet interfaces and not on virtual interfaces.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

service-policy input

Attaches the specified ingress service policy to the interface.

Syntax

[**no**] **service-policy input** *<policy name>*

where:

Parameter	Description
policy name	The name of the policy to attach

Using **no** before the command detaches the policy.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command attaches service policy MyPolicy to incoming traffic on the interface:

```
Switch(config-if)# service-policy input MyPolicy
```

Restrictions

● The policy map must exist before you can attach it to the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

service-policy output

Attaches the specified egress service policy to the interface.

Syntax

[no] **service-policy output** *<policy name>*

where:

Parameter	Description
policy name	The name of the policy to attach

Using **no** before the command detaches the policy.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command attaches service policy MyPolicy to outgoing traffic on the interface:

```
Switch(config-if)# service-policy output MyPolicy
```

Restrictions

● This command only works on Ethernet interfaces and not on virtual interfaces.

● The policy map must exist before you can attach it to the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

service-policy type qos

Attaches the specified Quality of Service (QoS) service policy to the interface in the specified direction.

Syntax

[no] **service-policy type qos {input|output}** *<policy name>*

where:

Parameter	Description
input	Attach an input QoS policy.
output	Attach an output QoS policy.
policy name	The name of the QoS policy to attach

Using **no** before the command detaches the policy.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command attaches QoS service policy MyPolicy to incoming traffic on the interface:

```
Switch(config-if)# service-policy type qos input MyPolicy
```

Restrictions

● The QoS policy for the specified direction must exist before you can attach it to the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

service-policy type queuing

Attaches the specified queuing service policy to the interface in the specified direction.

Syntax

[**no**] **service-policy type queuing {input|output}** *<policy name>*

where:

Parameter	Description
input	Attach an input queuing policy.
output	Attach an output queuing policy.
policy name	The name of the queuing policy to attach

Using **no** before the command detaches the policy.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command attaches queuing service policy MyPolicy to outgoing traffic on the interface:

```
Switch(config-if)# service-policy type queuing output MyPolicy
```

Restrictions

● This command only works on Ethernet interfaces and not on virtual interfaces.

● The queue policy for the specified direction must exist before you can attach it to the interface.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

sflow enable

Enables or disables sFlow on a specific interface.

Syntax

[no] **sflow enable**

Modes

Interface Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables sFlow on a specific interface:

```
Switch(config-if)# sflow enable
```

shutdown

Shuts down the interface.

Syntax

[no] **shutdown**

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command shuts down the interface:

```
Switch(config-if)# shutdown
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

snmp trap link-status

Displays status for SNMP linkup and linkdown traps on the interface.

Syntax

```
snmp trap link-status
```

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays status for SNMP linkup and linkdown traps on the interface:

```
Switch(config-if)# snmp trap link-status
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree bpdufilter

Enables or disables the spanning-tree Bridge Protocol Data Unit (BPDU) filter on the interface.

Syntax

[no] spanning-tree bpdufilter {enable|disable}

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the spanning-tree BPDU filter on the interface:

```
Switch(config-if)# spanning-tree bpdufilter enable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree bpduguard

Enables or disables the blockage of spanning-tree Bridge Protocol Data Units (BPDUs) on the interface.

Syntax

[no] **spanning-tree bpduguard {enable|disable}**

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the spanning-tree BPDU guard on the interface:

```
Switch(config-if)# spanning-tree bpduguard enable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree cost

Sets the spanning-tree port path cost on the interface.

Syntax

[**no**] **spanning-tree cost {**<*port path cost*>**|auto}**

where:

Parameter	Description
port path cost	The port path cost; an integer from 1-200000000.
auto	Automatically determine the port path cost based on the media speed of this interface.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the spanning-tree port path cost to 100 for the interface:

```
Switch(config-if)# spanning-tree cost 100
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree disable

Disables spanning-tree protocol on the interface.

Syntax

`spanning-tree disable`

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables spanning-tree protocol on the interface:

```
Switch(config-if)# spanning-tree disable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
spanning-tree enable	Enables spanning-tree protocol on the interface

spanning-tree enable

Enables spanning-tree protocol on the interface.

Syntax

`spanning-tree enable`

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables spanning-tree protocol on the interface:

```
Switch(config-if)# spanning-tree enable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
spanning-tree disable	Disables spanning-tree protocol on the interface

spanning-tree guard loop

Enables or disables loop guard on a port.

Note: If root guard is configured, loop guard is automatically disabled.

Syntax

spanning-tree guard loop

no spanning-tree guard

Modes

Interface Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables loop guard on a port:

```
Switch(config-if)# spanning-tree guard loop
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree guard root

Sets the spanning-tree guard mode on the interface.

Note: Enabling root guard automatically disables loop guard.

Syntax

spanning-tree guard root

no spanning-tree guard

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the spanning-tree guard mode to root guard on the interface:

```
Switch(config-if)# spanning-tree guard root
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree link-type

Sets the spanning-tree link type on the interface.

Syntax

[no] `spanning-tree link-type` {**auto**|**point-to-point**|**shared**}

where:

Parameter	Description
auto	Sets the spanning-tree link type based on the media duplex of the interface.
point-to-point	Sets the spanning-tree link type to point-to-point on the interface.
shared	Sets the spanning-tree link type to shared on the interface.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the spanning-tree guard mode to root guard on the interface:

```
Switch(config-if)# spanning-tree link-type point-to-point
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree mst

Sets parameters for a multiple spanning-tree configuration on the interface.

Syntax

[no] spanning-tree mst *<MST instance>* **{cost {***<port path cost>***|auto}| port-priority** *<port priority>***}**

where:

Parameter	Description
MST instance	An instance or a range of instances.
port path cost	The port path cost; an integer from 1-200000000.
auto	Automatically determine the port path cost based on the media speed of this interface.
port priority	The port priority for interface; a multiple of 32 from 0-224.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the spanning-tree port path cost to 300 for instances 0-3 on the interface:

```
Switch(config-if)# spanning-tree mst 0-3 cost 300
```

The following command sets the spanning-tree port priority to 128 for instances 7-9 on the interface:

```
Switch(config-if)# spanning-tree mst 7-9 port-priority 128
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree port

Sets the spanning-tree port type on the interface.

Syntax

[no] **spanning-tree port type edge**

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the spanning-tree port type to edge port on the interface:

```
Switch(config-if)# spanning-tree port type edge
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree port-priority

Sets the spanning-tree port priority for the interface.

Syntax

[no] **spanning-tree port-priority** *<port priority>*

where:

Parameter	Description
port priority	The port priority for interface; a multiple of 32 from 0-224.

Using **no** before the command with no argument removes the port priority from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the spanning-tree port priority to 128 on the interface:

```
Switch(config-if)# spanning-tree port-priority 128
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree vlan <vlan number> cost

Sets the RPVST+ port path cost on the interface.

Syntax

[no] spanning-tree vlan *<VLAN number>* **cost** *<port path cost>*|**auto**

where:

Parameter	Description
VLAN number	The VLAN number. Range is from 1 to 4094.
port path cost	The port path cost; an integer from 1-200000000.
auto	Automatically determine the port path cost based on the media speed of this interface.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command enables the RPVST+ port path cost to 100 for the interface:

```
Switch(config-if)# spanning-tree vlan 3 cost 100
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

spanning-tree vlan <vlan number> port-priority

Sets the RPVST+ port priority for the interface.

Syntax

[no] spanning-tree vlan *<VLAN number>* **port-priority** *<port priority>*

where:

Parameter	Description
VLAN number	The VLAN number. Range is from 1 to 4094.
port priority	The port priority for interface; a multiple of 32 from 0-224.

Using **no** before the command with no argument removes the port priority from the interface.

Modes

Interface Configuration Mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command sets the RPVST+ port priority to 128 on the interface:

```
Switch(config-if)# spanning-tree vlan 3 port-priority 128
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

speed

Configures the port speed for the interface.

By default, the switch automatically negotiates the port speed.

Syntax

- G8272, G8296, G8332:

  speed {1000|10000|40000|auto}

  where:

Parameter	Description
1000	Sets the port speed to 1 Gb/second.
10000	Sets the port speed to 10 Gb/second.
40000	Sets the port speed to 40 Gb/second.
auto	Auto-negotiates the port speed.

- NE1032:

  speed {1000|10000|auto}

  where:

Parameter	Description
1000	Sets the port speed to 1 Gb/second.
10000	Sets the port speed to 10 Gb/second.
auto	Auto-negotiates the port speed.

- NE1032T:

  speed {100|1000|10000|auto}

  where:

Parameter	Description
100	Sets the port speed to 0.1 Gb/second.
1000	Sets the port speed to 1 Gb/second.
10000	Sets the port speed to 10 Gb/second.
auto	Auto-negotiates the port speed.

- NE1072T:

speed {100|1000|10000|40000|auto}

where:

Parameter	Description
100	Sets the port speed to 0.1 Gb/second.
1000	Sets the port speed to 1 Gb/second.
10000	Sets the port speed to 10 Gb/second.
40000	Sets the port speed to 40 Gb/second.
auto	Auto-negotiates the port speed.

- NE10032 and NE2572:

speed {10000|25000|40000|50000|100000|auto}

where:

Parameter	Description
10000	Sets the port speed to 10 Gb/second.
25000	Sets the port speed to 25 Gb/second.
40000	Sets the port speed to 40 Gb/second.
50000	Sets the port speed to 50 Gb/second.
100000	Sets the port speed to 100 Gb/second.
auto	Auto-negotiates the port speed.

To reset the port speed to its default value, use the following command:

no speed

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	The command was updated to support the NE1032,NE1032T, NE1072T, NE10032, and NE2572.
10.7	Added 100 Mbps for NE1032T, NE1072T.

Example

The following command sets the port speed to 10 Gb/second on the interface:

```
Switch(config-if)# speed 10000
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

storm-control

Sets storm-control for the interface.

Syntax

[**no**] **storm-control** {**broadcast**|**multicast**|**unicast**} **level** *<level>*

where:

Parameter	Description
broadcast	Sets broadcast address storm control.
multicast	Sets multicast address storm control.
unicast	Sets unicast address storm control.
level	Level; a whole number or a decimal number.

Using **no** before the command with all but the last argument negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the broadcast storm control to 4.5 on the interface:

```
Switch(config-if)# storm-control broadcast level 4.5
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

vlan dot1q tag native

Removes the specified VLANs from the list of allowed VLANs in switchport trunk mode for the interface.

Syntax

[no] **vlan dot1q tag native** {**enable**|**egress-only enable**|**disable**}

where:

Parameter	Description
enable	Enables IEEE 802.1Q native VLAN tagging on the interface.
egress-only enable	Enables IEEE 802.1Q native VLAN tagging on the interface for egress traffic only.
disable	Disables IEEE 802.1Q native VLAN tagging on the interface.

Using **no** before the command with all but the last argument negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IEEE 802.1Q native VLAN tagging on the interface for egress traffic only:

```
Switch(config-if)# vlan dot1q tag native egress-only enable
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

vrrp

Enters Virtual Router Redundancy Protocol (VRRP) configuration mode for the interface.

Syntax

vrrp *<virtual router identifier>* [**ipv6**]

where:

Parameter	Description
virtual router identifier	The virtual router identifier; an integer from 1-255.
ipv6	Optional; assume IPv6 address family.

Using **no** before the command negates it.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters VRRP mode, configuring virtual router 2:

```
Switch(config-if)# vrrp 2
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

Chapter 6. Line Mode Commands

This chapter describes how to enter Line Configuration Mode and the commands available in this mode.

line

Enter Line Configuration Mode.

Syntax

[no] line {console *<console line>***|vty** *<VTY number>***}**

where:

Parameter	Function
console line	The console line number; default value is 0.
VTY number	The virtual terminal number; an integer from 0-63.

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters Line Configuration Mode to configure virtual terminal 3:

```
Switch(config)# line vty 3
Switch(config-line)#
```

exec-timeout

Sets the length of idle time before the terminal is automatically logged out.

Syntax

[**no**] **exec-timeout** *<timeout minutes>* **[***<seconds***>]**

where:

Parameter	Function
timeout minutes	The number of minutes of idle time before the terminal is logged out; an integer from 0-35791. Default value is 10. A value of 0 indicates infinite idle time (no automatic logout).
seconds	The number of seconds of idle time before the terminal is logged out; an integer from 0-2147483.

Using **no** before restores the default setting.

Modes

Line Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the idle timeout to 60:

```
Switch(config-line)# exec-timeout 60 5
```

Related Commands

Command	Description
line	Enters Line Configuration Mode for the specified terminal.

history

Sets the maximum number of commands stored in history.

Note: This command does not affect the behavior of the existing connected vty. It will only take effect after closing the session and reconnecting.

Syntax

[**no**] **history max** *<commands>*

where:

Parameter	Function
commands	The maximum number of commands to be kept in the CLI history; an integer from 0-2147483647.

Using **no** before the command without the last argument negates it.

Modes

Line Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the maximum number of commands to be retained in history to 60:

```
Switch(config-line)# history max 60
```

Related Commands

Command	Description
line	Enters Line Configuration Mode for the specified terminal.

privilege

Sets the default privilege level for the line.

Syntax

[**no**] **privilege level** *<privilege level>*

where:

Parameter	Function
privilege level	The privilege level for the line; an integer from 1-15, or 16 for the maximum privilege level.

Using **no** before the command negates it.

Modes

Line Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the privilege level for the line to 1:

```
Switch(config-line)# privilege level 1
```

Related Commands

Command	Description
line	Enters Line Configuration Mode for the specified terminal.

Chapter 7. Class Map Mode Commands

This chapter describes the commands for entering and using Class Map Configuration Mode, Quality of Service (QoS) Class Map Configuration Mode, and Queueing Class Map Configuration Mode.

class-map type qos

Adds or removes a Quality of Service (QoS) class map that is used to match packets to a specified class. After creating a class map, the user enters QoS Class Map Configuration mode.

Syntax

[no] class-map [type qos] [{match-all|match-any}] *<class map name>*

where:

Parameter	Function
match-all	Configures the class map to use the logical AND function for packet evaluation when dealing with multiple match rules.
match-any	Configures the class map to use the logical OR function for packet evaluation when dealing with multiple match rules.
class map name	The name of the class map.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds QoS class map 'cmap-qos-01' that uses the logical AND function when evaluating packets:

```
Switch(config)# class-map type qos match-all cmap-qos-01
```

Restrictions

For this release, the switch supports **match-any** only; **match-all** command will have the same effect as **match-only**.

class-map type control-plane

Modifies a control-plane class map that is used to match packets to a specified class.

Syntax

[no] class-map type control-plane match-any *<class map name>*

where:

Parameter	Function
match-any	Configures the class map to use the logical OR function for packet evaluation when dealing with multiple match rules.
class map name	The name of the class map.

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command modifies control-plane class map 'copp-s-igmp-query' that uses the logical AND function when evaluating packets:

```
Switch(config)# class-map type control-plane match-any copp-s-igmp-query
```

match

Defines the classification criteria when evaluating packets used for the current Quality of Service (QoS) class map.

Syntax

[no] match [no]t] {access-group name *<ACL name>***|cos** *<CoS value>***|**
dscp *<DSCP value>***|ip rtp** *<TCP port>***|precedence** *<precedence value>***|**
protocol *<protocol name>***}**

where:

Parameter	Function
`not`	Match all criteria except the specified one.
`access-group name` *ACL name*	Defines the specified Access Control List (ACL) as the classification criterion.
`cos` *CoS value*	Defines the specified Class of Service (CoS) as the classification criterion. The *CoS value* is from 0 to 7 and it can be specified as a range.
`dscp` *DSCP value*	Defines the specified DiffServ Code Point (DSCP) as the classification criterion. The *DSCP value* is from 0 to 63 or one of the following: ● `af11` - AF11 DSCP (001010) ● `af12` - AF12 DSCP (001100) ● `af13` - AF13 DSCP (001110) ● `af21` - AF21 DSCP (010010) ● `af22` - AF22 DSCP (010100) ● `af23` - AF23 DSCP (010110) ● `af31` - AF31 DSCP (011010) ● `af32` - AF32 DSCP (011100) ● `af33` - AF33 DSCP (011110) ● `af41` - AF41 DSCP (100010) ● `af42` - AF42 DSCP (100100) ● `af43` - AF43 DSCP (100110) ● `cs1` - CS1(precedence 1) DSCP (001000) ● `cs2` - CS2(precedence 2) DSCP (010000) ● `cs3` - CS3(precedence 3) DSCP (011000) ● `cs4` - CS4(precedence 4) DSCP (100000) ● `cs5` - CS5(precedence 5) DSCP (101000) ● `cs6` - CS6(precedence 6) DSCP (110000) ● `cs7` - CS7(precedence 7) DSCP (111000) ● `default` - Default DSCP (000000) ● `ef` - EF DSCP (101110)

Parameter	Function
`ip rtp` *TCP port*	Defines the Transmission Control Protocol (TCP) port used by Real-time Transport Protocol (RTP) processes as the classification criterion. The *TCP port* can be from 2000 to 65535.
`precedence` *precedence value*	Defines the precedence as the classification criterion. The precedence value is from 0 to 7 or it can be one of the following: ● `routine` - Routine precedence (0) ● `priority` - Priority precedence (1) ● `immediate` - Immediate precedence (2) ● `flash` - Flash precedence (3) ● `flash-override` - Flash override precedence (4) ● `critical` - Critical precedence (5) ● `internet` - Internetwork control precedence (6) ● `network` - Network control precedence (7)
`protocol` *protocol name*	Defines a protocol as the classification criterion. The *protocol name* can be one of the following: ● `arp` - Address Resolution Protocol ● `bridging` - Bridging ● `cdp` - CISCO Discovery Protocol ● `clns` - Connectionless Network Service ● `clns-es` - CLNS End Systems ● `clns-is` - CLNS Intermediate Systems ● `dhcp` - Dynamic Host Configuration ● `isis` - Intermediate System to Intermediate System ● `ldp` - Label Distribution Protocol ● `netbios` - NetBIOS extended user interface

Modes

QoS Class Map Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command defines the classification criterion as protocol ARP:

```
Switch(config-cmap-qos)# match protocol arp
```

class-map type queuing

Modifies a queuing class map that is used to match packets to a specified class. After creating a class map, enters Queuing Class Map Configuration mode.

Syntax

[no] class-map type queuing match-any *<queue name>*

where:

Parameter	Function
match-any	Configures the class map to use the logical OR function for packet evaluation when dealing with multiple match rules.
queue name	The name of the queue. The possible options are: ○ `1p7q1t-out-q-default` (queue 0 or default queue) ○ `1p7q1t-out-pq1` (queue 1 or priority queue) ○ `1p7q1t-out-q2` (queue 2) ○ `1p7q1t-out-q3` (queue 3) ○ `1p7q1t-out-q4` (queue 4) ○ `1p7q1t-out-q5` (queue 5) ○ `1p7q1t-out-q6` (queue 6) ○ `1p7q1t-out-q7` (queue 7)

Modes

Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command modifies queuing class map `1p7q1t-out-q3` that uses the logical OR function when evaluating packets:

```
Switch(config)# class-map type queuing match-any 1p7q1t-out-q3
```

match

Defines the classification criteria when evaluating packets used for the current queuing class map.

Syntax

[no] match {cos *<CoS value>***|qos-group** *<QoS group value>***}**

where:

Parameter	Function
cos *CoS value*	Defines the specified Class of Service (CoS) as the classification criterion. The *CoS value* is from 0 to 7 and it can be specified as a range.
qos-group *QoS group value*	Defines the specified Quality of Service (QoS) group as the classification criterion. The *QoS group value* is from 0 to 7 and it can be specified as a range.

Modes

Queuing Class Map Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command defines the classification criterion as CoS value 3:

```
Switch(config-cmap-que)# match cos 3
```

Chapter 8. Route Map Mode Commands

These commands enter you into an advanced configuration mode for the selected routing map.

route-map

Enters the Route Map Configuration Mode or creates a route map.

Syntax

[no] route-map *<route-map name>* **[{deny|permit}** *<sequence number>***]**

where:

Parameter	Function
<route-map name>	Enters route map configuration mode for the named routing map.
deny	Denies to distribute route if the match criteria are met.
permit	Accepts to distribute route if the match criteria are met.
<sequence number>	Indicates the position of a new clause in the specified route map (an integer from 1-65535).

Using **no** before the command turns off route map or deletes an entry.

Mode

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters route map configuration for route map 'rmap-10' and clause '2330':

```
Switch(config)# route-map rmap-10 permit 2330
```

Restrictions

Specifying multiple match condition in a single match command is not supported.

Related Commands

Command	Description
configure terminal	Enter Configuration Mode.

match as-path

Matches a BGP autonomous system path access list.

Syntax

[no] match as-path *<name>*

where:

Parameter	Description
<name>	The name of AS path access list.

Using **no** before the command turns off the as-path matching.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a matching BGP as-path access-list named *test*:

```
Switch(config-route-map)# match as-path test
```

Related Commands

Command	Description
ip as-path access-list	Creates or deletes a BGP AS access list.

match community

Matches a BGP community list in a route map.

Syntax

[no] match community *<name>* **[exact match**]

where:

Parameter	Description
<name>	The name of the BGP community list.
exact match	Indicates that an exact match is required. All of the communities and only those communities specified in the selected community list must be present.

Using **no** before the command removes BGP community list entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a match for BGP community:

```
Switch(config-route-map)# match community test exact-match
```

Related Commands

Command	Description
ip community-list expanded	Adds or removes an expanded entry to or from the specified BGP community list.
ip community-list standard	Adds or removes a standard entry to or from the specified BGP community list.

match extcommunity

Matches a BGP extended community list in a route map.

Syntax

[no] match extcommunity *<name>* **[exact match]**

where:

Parameter	Description
<name>	The name of the BGP extended community.
exact match	Indicates that an exact match is required. All of the extended communities and only those communities specified in the selected extended community list must be present.

Using **no** before the command removes BGP extended community list entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a match for BGP extended community:

```
Switch(config-route-map)# match extcommunity test exact-match
```

Related Commands

Command	Description
ip extcommunity-list expanded	Adds or removes an expanded entry to or from the specified BGP extended community list.
ip extcommunity-list standard	Adds or removes a standard entry to or from the specified BGP extended community list.

match interface

Specifies the next-hop interface name of a route to be matched.

Syntax

[no] match interface {<*interface name*>**|ethernet** <*chassis number*> **|loopback** <*loopback interface number*>**|mgmt 0|port-channel** <*LAG number*>**|vlan** <*VLAN number*>**}**

where:

Parameter	Description
<*interface name*>	IP interface name.
ethernet <*chassis number*>	Ethernet chassis number.
loopback <*loopback interface number*>	Loopback interface value (a number from 0 to 7).
mgmt 0	Management interface.
port-channel <*LAG number*>	LAG value (a number from 1 to 4096).
vlan <*VLAN number*>	VLAN interface number (a number from 1 to 4094).

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a match on interface ethernet 1/12:

```
Switch(config-route-map)# match interface ethernet 1/12
```

match ip

Matches the IPv4 prefix lists in a route map.

Syntax

`[no] match ip {address|next-hop} prefix-list` *<name>*

where:

Parameter	Description
`address`	Destination IP address.
`next-hop`	Next-hop address of route.
`prefix-list`	Predefined list to match distributed routes.
<name>	Name of the prefix list.

Using **no** before the command removes the address or next-hop entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following distributes routes that have a next-hop router address passed by the prefix list named test:

```
Switch(config-route-map)# match ip next-hop prefix-list test
```

The following distributes routes that have a destination network number address passed by the prefix list named test:

```
Switch(config-route-map)# match ip address prefix-list test
```

Related Commands

Release	Modification
ip prefix-list	Adds or removes an IPv4 prefix list used to filter BGP routes.

match ipv6

Matches the IPv6 prefix lists in a route map.

Syntax

[no] match ipv6 {address|next-hop} prefix-list *<name>*

where:

Parameter	Description
address	Destination IP address.
next-hop	Next-hop address of route.
prefix-list	Predefined list to match distributed routes.
<name>	Name of the prefix list.

Using **no** before the command removes the address or next-hop entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following distributes routes that have a next-hop router address passed by the prefix list named test:

```
Switch(config-route-map)# match ipv6 next-hop prefix-list test
```

The following distributes routes that have a destination network number address passed by the prefix list named test:

```
Switch(config-route-map)# match ipv6 address prefix-list test
```

match metric

Matches the metric values configured in a route map.

Syntax

[no] **match metric** *<metric-value>*

where:

Parameter	Description
<metric-value>	Route metric (a number from 0 to 4294967295).

Using **no** before the command removes the metric match.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following redistributes routes that match routing metric value 10:

```
Switch(config-route-map)# match metric 10
```

match origin

Redistributes routes that match the BGP origin code.

Syntax

`[no] match origin {egp|igp|incomplete}`

where:

Parameter	Description
`egp`	Remote exterior gateway protocol (EGP) system.
`igp`	Local interior gateway protocol (IGP) system.
`incomplete`	Unknown origin.

Using **no** before the command removes the origin match.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following redistributes routes that match an incomplete origin:

```
Switch(config-route-map)# match origin incomplete
```

match route-type

Redistributes routes that match the specified route type.

Syntax

```
[no] match route-type external [type-1|type-2] [internal
[inter|intra]] [nssa-external [type-1|type-2]]
```

```
[no] match route-type internal [inter|intra] [external
[type-1|type-2]] [nssa-external [type-1|type-2]]
```

```
[no] match route-type nssa-external [type-1|type-2] [external
[type-1|type-2]] [internal [inter|intra]]
```

where:

Parameter	Description
`external`	Redistributes external OSPF routes.
`nssa-external`	Redistributes Not-so-stubby Area (NSSA) external routes.
`type-1`	Redistributes OSPF type 1 routes.
`type-2`	Redistributes OSPF type 2 routes.
`internal`	Redistributes internal OSPF routes.
`intra`	Redistributes OSPF intra-area internal routes.
`inter`	Redistributes OSPF inter-area internal routes.

Modes

Route Map Configuration Mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command redistributes NSSA OSPF type 1 external routes, OSPF type 1 external routes, and all internal routes:

```
Switch(config-route-map)# match route-type nssa-external type-1 external
type-1 internal
```

match tag

Redistributes routes that match the specified tags.

Syntax

[no] **match tag** *<route tag value>*

where:

Parameter	Description
<route tag value>	List of route tag values (a number from 0 to 4294967295).

Using **no** before the command removes the tag match.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following redistributes routes that match the tag value 4:

```
Switch(config-route-map)# match tag 4
```

set aggregator

Sets the BGP aggregator attribute.

Syntax

[**no**] **set aggregator as** *<AS number>* *<IP address>*

where:

Parameter	Description
<AS number>	The aggregator's autonomous system path number.
<IP address>	The aggregator's BGP identifier of the originator router.

Using **no** before the command disables the function.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the BGP aggregator attribute:

```
Switch(config-route-map)# set aggregator as 1 9.1.0.0
```

set as-path

Modifies an autonomous system path (as-path) for BGP routes.

Syntax

[no] set as-path {tag|prepend {<*AS number*>**|last-as** <*prepend number*>**}}**

where:

Parameter	Description
tag	Tag of a route.
prepend	Adds an as-path number to the AS path of the route.
<*AS number*>	Autonomous system path number.
last-as	Prepends the last AS to the AS path.
<*prepend number*>	The number of times the last AS is prepended to the AS path.

Using **no** before the command disables the function.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following prepends 50 to all routes:

```
Switch(config-route-map)# set as-path prepend 50
```

set atomic-aggregate

Sets the BGP atomic aggregate attribute.

Syntax

[no] `set atomic-aggregate`

Using **no** before the command disables the function.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the BGP atomic aggregate attribute:

```
Switch(config-route-map)# set atomic-aggregate
```

Restrictions

This parameter is set automatically when an aggregate route is created with the
aggregate-address command.

set comm-list

Removes the BGP community attribute from the route map configuration.

Syntax

[no] **set comm-list** *<community list name>* **delete**

where:

Parameter	Description
<community list name>	The community list name. Communities from this list will be removed.

Using **no** before the command removes a previous **set** command.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following delete the community-list named test:

```
Switch(config-route-map)# set comm-list test delete
```

set community

Sets the BGP community attribute.

Syntax

[no] **set community** {**none|**{*<community number>***[***<community number list>***]|additive|internet|local-AS|no-advertise|no-export**}}

where:

Parameter	Description
none	Removes the community attribute from prefix that passed the route-map.
<community number>	Sets the BGP community attribute (a number from 1 to 65535). Enter up to 32 communities strings using the format, aa:nn.
additive	Adds to existing community.
internet	Specifies the internet community.
local-AS	Specifies the local-AS community. Outside local AS are not sent.
no-advertise	Specifies the no-advertise community. Routes are not advertised to any peers.
no-export	Specifies the no-export community. Routes are not exported to the next AS.

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the BGP community attribute:

```
Switch(config-route-map)# set community 3:1
```

set dampening

Sets the BGP route dampening factors.

Syntax

[no] set dampening [<*half-life*> **[**<*reuse*> **[**<*suppress*> **[**<*max-duration*>
[<<*unreach half-life*>**]]]]]**

where:

Parameter	Description
<*half-life*>	Time after which a penalty is decreased by half (a number from 1 to 45). The default is 15 minutes.
<*reuse*>	Value to start reusing a route (a number from 1 to 20000). The default is 750.
<*suppress*>	Value to start supressing a route (a number from 1 to 20000). The default is 2000.
<*max-duration*>	Maximum duration to suppress a stable route (a number from 1 to 255). The default value is 4 times the half-life time (60 minutes).
<*unreach half-life*>	Time after which an unreachable route's penalty is decreased by half (a number from 1 to 45). The default is 15 minutes.

Using **no** before the command disables the feature.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the BGP route dampening factors:

```
Switch(config-route-map)# set dampening 10 750 1500 20 15
```

set extcommunity

Sets an extended community attribute.

Syntax

[no] set extcommunity {rt|soo} *<AA:NN>* **[***<AA:NN list>***]**

where:

Parameter	Description
rt	Specifies the route target extended community.
soo	Specifies the site-of-origin extended community.
AA:NN	Extended community number (AS and network numbers).

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures an extended community attribute:

```
Switch(config-route-map)# set extcommunity rt 3:1
```

set ip next-hop

Sets the specified next-hop value.

Syntax

[no] **set ip next-hop** {*<IP address>***|peer-address**}

where:

Parameter	Description
<IP address>	Sets the IP addresses for the next-hop for the matched routes. When multiple addresses are specified they are prioritized in the order in which they are entered. Each next-hop must be an adjacent router.
peer-address	Applied on output, sets the next-hop of the advertised matching routes to the current local address of the local router. Applied on input, sets the next-hop of the received matching routes to the neighbor address, overriding other existing next-hops.

Using **no** before the command removes the next-hop configuration.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the next-hop IP address:

```
Switch(config-route-map)# set ip next-hop 10.0.0.2
```

set ipv6 next-hop

Sets the specified next-hop value.

Syntax

[**no**] **set ipv6 next-hop** {*<IPv6 address>*|**peer-address**}

where:

Parameter	Description
<IPv6 address>	Sets the IP addresses for the next-hop for the matched routes. When multiple addresses are specified they are prioritized in the order in which they are entered. Each next-hop must be an adjacent router.
peer-address	Applied on output, sets the next-hop of the advertised matching routes to the current local address of the local router. Applied on input, sets the next-hop of the received matching routes to the neighbor address, overriding other existing next-hops.

Using **no** before the command removes the next-hop configuration.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the next-hop IPv6 address:

```
Switch(config-route-map)# set ipv6 next-hop 2001:db8::8a2e:370:7334
```

set local-preference

Sets the local preference. The path with the higher value is preferred.

Syntax

[no] **set local-preference** *<number value>*

where:

Parameter	Description
<number value>	Preference value (a number from 0 to 4294967295).

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the BGP local-preference attribute:

```
Switch(config-route-map)# set local-preference 5
```

set metric

Sets a metric value for the matching routes.

Syntax

[no] **set metric** *<metric value>*

where:

Parameter	Description
<metric value>	Metric value (a number from 1 to 4294967295).

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the metric value:

```
Switch(config-route-map)# set metric 5
```

set metric-type

Sets the type of OSPF metric.

Syntax

[no] **set metric-type** {**type-1|type-2**}

where:

Parameter	Description
type-1	External routes are calculated using both internal and external metrics.
type-2	External routes are calculated using only the external metrics. Type 1 routes are preferred over Type 2.

Using **no** before the command removes the OSPF metric of the current route map.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the OSPF metric type to type-1:

```
Switch(config-route-map)# set metric-type type-1
```

set origin

Sets the BGP origin code. This attribute defines the origin of the path information.

Syntax

[no] **set origin** {**egp** *<AS number>***|igp|incomplete**}

where:

Parameter	Description
egp	Specifies the AS number for a remote exterior gateway protocol (EGP) system.
<AS number>	AS number value. You can specify the value also in ASDOT format.
igp	Specifies a local interior gateway protocol (IGP) system.
incomplete	Specifies an unknown heritage.

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the BGP origin:

```
Switch(config-route-map)# set origin egp 5
```

set originator-id

Sets the originator ID attribute.

Syntax

[no] **set originator-id** *<IP address>*

where:

Parameter	Description
<IP address>	Identifier of the originator router.

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the originator ID attribute:

```
Switch(config-route-map)# set originator-id 1.1.1.1
```

set tag

Sets a tag value of the destination routing protocol.

Syntax

[**no**] **set tag** *<tag value>*

where:

Parameter	Description
<tag value>	Identifier of the tag value (a number from 0 to 4294967295).

Using **no** before the command removes the tag.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the tag attribute:

```
Switch(config-route-map)# set tag 4
```

set weight

Sets the weight of matching routes.

Syntax

[no] set weight *<number>*

where:

Parameter	Description
<number>	Weight value (a number from 0 to 65535).

Using **no** before the command removes the entry.

Modes

Route Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the weight:

```
Switch(config-route-map)# set weight 5
```

Chapter 9. BGP Configuration Mode Commands

These commands enter you into an advanced configuration mode for configuring the switch to receive routes and to advertise static routes, fixed routes and virtual server IP addresses with other internal and external routers.

router bgp

Assigns an autonomous system (AS) number to a router and enters the BGP configuration mode.

Syntax

[no] router bgp *<AS number>*

where:

Parameter	Function
<AS-number>	Number of an AS (a number from 1 to 4294967295).

Using **no** before the command removes an AS assignment.

Mode

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command shows how to configure a BGP process for autonomous system 100:

```
Switch(config)# router bgp 100
```

Related Commands

Command	Description
configure terminal	Enter Configuration Mode.

bestpath

Changes the default best path selection.

Syntax

[no] **bestpath** *<arguments>*

where:

Parameter	Description
always-compare-med	Compares the MED on paths from a different AS.
as-path ignore	Ignores as-path length in selecting a route.
as-path multipath-relax	Allows load sharing across providers with different (but equal- length) AS paths. The AS paths must be identical for load sharing.
compare-confed-asp ath	Specifies that the AS confederation path length must be used when available in the BGP best path decision process.
compare-routerid	Compares the router IDs for identical eBGP paths.
dont-compare-origi nator-id	Avoids comparing an originator-ID for an identical eBGP path.
tie-break-on-age	Selects always the older preferred route even when the **compare-route-id** command is set.
med confed	Enables MED comparison among paths learned from confederation peers.
med missing-as-worst	Handles a missing MED as the highest MED.
med non-deterministic	Does not always select the best MED path from among the paths from the same AS numbers.
med remove-recv-med	Removes received MED attribute.
med remove-send-med	Remove send MED attribute.

Using **no** before the command returns the BGP routing process to the default operation.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following changes the default best-path selection algorithm to compare the MED on paths from different AS:

```
Switch(config-router)# bestpath always-compare-med
```

bgp

Configures additional BGP settings.

Syntax

[**no**] **bgp {as-local-count** *<number of times>***}**

where:

Parameter	Description
as-local-count	Appends local-as.
<number of times>	Number of times local-as to be appended.

Using **no** before the command turns off this feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following appends 4 times the local-as:

```
Switch(config-router)# bgp as-local-count 4
```

cluster-id

Specifies the router's Cluster ID used when operating as a route reflector. Route reflectors that are part of the same cluster (assigned to the same group of clients) must use identical Cluster IDs.

Syntax

[no] **cluster-id** {*<number>***|***<IP address>*}

where:

Parameter	Description
<number>	Cluster-ID as 32 bit quantity (a number from 1 to 4294967295).
<IP address>	Cluster-ID in IP address format.

Using **no** before the command removes router's Cluster ID.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures the cluster ID in IP address format:

```
Switch(config-router)# cluster-id 1.1.1.1
```

confederation

Sets AS confederation parameters for the BGP.

Syntax

[no] **confederation** {**identifier** *<AS number>***|peers** *<AS numbers>*}

where:

Parameter	Description
identifier	The routing domain confederation AS number. It is an externally visible AS number that identifies a BGP confederation as a whole.
<As number>	Autonomous system path number (a number from 1 to 65535).
peers	The peer AS numbers for a BGP confederation. It is an identifier visible only within a BGP confederation and used to represent a Member-AS within that confederation.
<AS numbers>	List of AS peers (a number from 1 to 65535).

Using **no** before the command deletes the AS number or the peer AS.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the confederation identifier:

```
Switch(config-router)# confederation identifier 5
```

dscp

Configures a DSCP value with BGP.

Syntax

dscp *<value>*

where:

Parameter	Description
<value>	DSCP value; an integer from 0-63.

Modes

BGP Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to add a DSCP value:

```
Switch(config-router)# dscp 10
```

enforce-first-as

Enforces the neighbor AS to be the first AS number listed in the AS_path attribute for eBGP.

Syntax

[no] **enforce-first-as**

Using **no** before the command turns off this enforcement.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enforce the neighbor AS to be the first AS number listed in the AS_path attribute:

```
Switch(config-router)# enforce-first-as
```

fast-external-failover

Enables BGP fast external failover.

Syntax

[no] **fast-external-failover**

Using **no** before the command turns off this feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows to enable BGP fast external failover:

```
Switch(config-router)# fast-external-failover 5
```

graceful-restart

Specifies the maximum time to keep a restarting peer's stale routes.

Syntax

[no] graceful-restart stalepath-time *<delay value>*

where:

Parameter	Description
<delay value>	Time value in seconds (a number from 1 to 3600). Default value is 360 seconds.

Using **no** before the command turns off the feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure graceful restart delay value:

```
Switch(config-router)# graceful-restart stalepath-time 180
```

graceful-restart-helper

Enables BGP gracefully restart helper mode feature. BGP router can work as receiving speaker.

Syntax

[**no**] **graceful-restart-helper**

Using **no** before the command turns off the feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to turn on BGP graceful restart helper mode:

```
Switch(config-router)# graceful-restart-helper
```

log-neighbor-changes

Generates a system message when a neighbor changes state.

Syntax

[no] `log-neighbor-changes`

Using **no** before the command turns off the feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure this feature:

```
Switch(config-router)# log-neighbor-changes
```

maxas-limit

Configures the eBGP to discard routes that have a high number of autonomous system (AS) numbers in the AS-path attribute.

Syntax

[no] **maxas-limit** *<number>*

where:

Parameter	Description
<number>	Maximum number of AS numbers (a number from 1 to 2000).

Using **no** before the command turns off this feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the maximum number of AS numbers to 10:

```
Switch(config-router)# maxas-limit 10
```

neighbor

Sets the remote autonomous system number for the specified peer or enters the Neighbor mode.

Syntax

[no] neighbor {<IPv4 address>**|**<IPv4 prefix>**|**<IPv6 address>**|**<IPv6 prefix>**}**
[remote-as <AS number>**]**

where:

Parameter	Description
<IPv4 address>	Neighbor IPv4 address.
<IPv4 prefix>	Neighbor IPv4 prefix.
<IPv6 address>	Neighbor IPv6 address.
<IPv6 prefix>	Neighbor IPv6 prefix.
<AS number>	AS value (a number from 1 to 4294967295).

Using **no** before the command removes an AS number.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the neighbor AS number for an IPv4 address:

```
Switch(config-router)# neighbor 1.1.1.1 remote-as 2
Switch(config-router-neighbor)#
```

router-id

Manually defines the router ID for a BGP speaker.

Syntax

[no] **router-id** *<IP address>*

where:

Parameter	Description
<IP address>	Router identifier.

Using **no** before the command reverts to the previous router ID behavior.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the router ID:

```
Switch(config-router)# router-id 1.1.1.1
```

synchronization

Prevents a BGP router from advertising routes learned from iBGP neighbors, unless those routes are also present in an IGP (for example, OSPF).

Syntax

[no] synchronization

Using **no** before the command turns off the feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable synchronization:

```
Switch(config-router)# synchronization
```

timers

Configures the routing timers.

Syntax

[no] timers bgp *<keep alive interval>* *<hold time>*

where:

Parameter	Description
<keep alive interval>	Time interval (in seconds) the switch awaits before sending another keepalive message to the BGP neighbor (a number from 0 to 3600). The default is 60.
<hold time>	Time interval (in seconds) the switch awaits before transitioning the BGP neighbor to IDLE state, if the switch doesn't receive an update or keepalive message from the neighbor (a number from 0 to 3600). The default is 180.

Using **no** before the command turns off this feature.

Modes

BGP Configuration Mode

BGP Neighbor Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure timers:

```
Switch(config-router)# timers bgp 60 180
```

unnumbered

Enables BGP unnumbered capability and enters BGP Unnumbered configuration mode. Through this capability, the router is able to establish a BGP session via IPv6 link local address.

This feature is disabled by default.

Syntax

[no] unnumbered

Modes

BGP Configuration Mode

History

Release	Modification
10.6	The command was introduced.
10.7	Added the BGP Unnumbered configuration mode.

Example

The following shows how to enable BGP unnumbered:

```
Switch(config-router)# unnumbered
Switch(config-router-unnumbered)#
```

bfd

Enables BFD for all BGP unnumbered neighbors. Through this capability, the router is able to establish BFD sessions.

This feature is disabled by default.

Syntax

[no] bfd

Modes

BGP Unnumbered Configuration Mode

History

Release	Modification
10.7	The command was introduced.

Example

The following shows how to enable BFD capability:

```
Switch(config-router-unnumbered)# bfd
```

vrf

Enables or disables BGP to use the default VRF instance.

By default, this is enabled.

Syntax

[no] vrf default

Using **no** before the command turns off the feature.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following enables BGP to use the default VRF instance:

```
Switch(config-router)# vrf default
```

Chapter 10. Address Family Mode Commands

This chapter describes the commands for entering and using BGP Address Family mode.

address-family

Enters address family configuration modes while configuring BGP routing.

Syntax

[no] address-family {ipv4|ipv6} unicast

where:

Parameter	Description
ipv4	Internet Protocol version 4.
ipv6	Internet Protocol version 6.
unicast	Unicast address support.

Using **no** before the command turns off this feature.

Modes

- BGP Configuration Mode
- BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following places the router in global address family configuration mode for the IPv4 unicast address family:

```
Switch(config-router)# address-family ipv4 unicast
Switch(config-router-af)#
```

aggregate-address

Creates an aggregate entry in the BGP routing table if any more-specific BGP routes are available in the specified range.

Syntax

```
[no] aggregate-address {<address>|<length>} [as-set]
[summary-only]
```

where:

Parameter	Description
as-set	Generates the autonomous system set path information and community information from the contributing paths.
summary-only	Filters all more-specific routes from updates.

Using **no** before the command removes the summary address.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to create an aggregate BGP address:

```
Switch(config-router-af)# aggregate-address 1.1.1.1/8 as set
```

client-to-client reflection

Enables route reflection from a BGP route reflector to clients.

Syntax

[no] client-to-client reflection

Using **no** before the command turns off this feature.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure router as a router reflection:

```
Switch(config-router-af)# client-to-client reflection
```

dampening

Enables BGP route dampening or changes BGP route dampening factors.

Syntax

[no] dampening [<*half-life*> **[**<*reuse*> <*suppress*> <*max-duration*> **[**<*unreach half-life*>**]]|route-map** <*name*>**]**

where:

Parameter	Description
<*half-life*>	Time after which a penalty is decreased by half (a number from 1 to 45). The default is 15 minutes.
<*reuse*>	Value to start reusing a route (a number from 1 to 20000). The default is 750.
<*suppress*>	Value to start suppressing a route (a number from 1 to 20000). The default is 2000.
<*max-duration*>	Maximum duration to suppress a stable route (a number from 1 to 255). The default value is 4 times the half-life time (60 minutes).
<*unreach half-life*>	Time after which an unreachable route's penalty is decreased by half (a number from 1 to 45). The default is 15 minutes.
route-map <*name*>	Name of the route map that controls where BGP route dampening is enabled.

Using **no** before the command turns off the feature.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables BGP route dampening with a half-life of one minute, a reuse route value of 500, a suppress route value of 2000, and a maximum duration value of three times the half-life time:

```
Switch(config-route-af)# dampening 1 500 2000 3
```

distance

Configures BGP administrative distances (AD).

Syntax

[no] distance *<external AD>* *<internal AD>* *<local AD>*

where:

Parameter	Description
<internal AD>	Administrative distance to routes inside the AS. The *internal AD* is from 1 to 255. The default is 200.
<external AD>	Administrative distance to routes outside the AS. The *external AD* is from 1 to 255. The default is 200.
<local AD>	Administrative distance for local routes. The *local AD* is from 1 to 255. The default is 200.

Using **no** before the command restore the system to its default value.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets distance:

```
Switch(config-router-af)# distance 100 120 150
```

Restrictions

A higher distance value means a lower trust rating (e.g., an administrative distance of 255 means that the routing information source cannot be trusted and should be ignored).

maximum-paths

Sets maximum paths allowed for an internal or external route.

Syntax

[no] **maximum-paths** {**ebgp|ibgp**} *<multipath numbers*

where:

Parameter	Description
ebgp	The maximum paths allowed for an external route.
ibgp	The maximum paths allowed for an internal route.
<multipath numbers>	Value for maximum path numbers (a number from 2 to 32). The default value is 8.

Using **no** before the command resets the maximum paths allowed for a route to its default value.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the maximum paths number:

```
Switch(config-router-af)# maximum-paths ibgp 4
```

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network

Configures an IP prefix for advertisement.

Syntax

[**no**] **network** {*<IP address>* **[mask** *<network mask>*]**|***<IP prefix length>*}
[backdoor|route-map <name>]

where:

Parameter	Description
<IP address>	IPv4 address in the format A.B.C.D.
mask *<network mask>*	IP subnet address mask.
<IP prefix length>	IPv4 address in the format A.B.C.D./length
backdoor	BGP backdoor route. The administrative distance assigned to the network is forced to the administrative distance of the local routes. IGP-learned routes are preferred. A network that is marked as a backdoor is not sourced by the local router, but should be learned from external neighbors.
route-map *<name>*	Route map attributes.

Using **no** before the command removes the IP prefix to advertise.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure an IP prefix:

```
Switch(config-router-af)# network 1.1.1.1/2 backdoor
```

Restrictions

For the **backdoor** command, make sure to verify the route is in the BGP table.
Otherwise, the command will not have the desired effect.

network synchronization

Performs IGP synchronisation on network routes.

Syntax

[no] **network synchronization**

Using **no** before the command turns off the feature.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure IGP synchronization:

```
Switch(config-router-af)# network synchronisation
```

nexthop

Specifies the next-hop address tracking delay timer for critical or non-critical next-hop reachability routes

Syntax

[**no**] **nexthop trigger-delay** {**critical** *<delay value>* **non-critical** *<delay value>*

where:

Parameter	Description
<delay value>	Delay value in milliseconds (a number from 1 to 4294967295).

Using **no** before the command turns off the feature.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure delay for next-hop tracking:

```
Switch(config-router-af)# nexthop trigger-delay critical 5 non-critical 4
```

redistribute

Redistributes routes from a routing domain to BGP.

Syntax

[no] redistribute {direct|ospf|static} [route-map *<map name>***]**

where:

Parameter	Description
direct	Routes directly connected on an interface.
ospf	Routes belonging to OSPF protocol.
static	IP static routes.
route-map *<map name>*	Specifies the route maps used for redistribution.

Using **no** before the command turns off the feature.

Modes

BGP Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to redistribute routes:

```
Switch(config-router-af)# redistribute direct route-map test
```

Chapter 11. Neighbor Mode Commands

This chapter describes the commands for entering and using BGP Neighbor mode.

neighbor

Sets the remote autonomous system number for the specified peer or enters the Neighbor mode.

Syntax

[no] neighbor {*<IPv4 address>***|***<IPv4 prefix>***|***<IPv6 address>***|***<IPv6 prefix>***}**
[remote-as *<AS number>***]**

where:

Parameter	Description
<IPv4 address>	Neighbor IPv4 address.
<IPv4 prefix>	Neighbor IPv4 prefix.
<IPv6 address>	Neighbor IPv6 address.
<IPv6 prefix>	Neighbor IPv6 prefix.
<AS number>	AS value (a number from 1 to 4294967295).

Using **no** before the command removes an AS number.

Modes

BGP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the neighbor AS number for an IPv4 address:

```
Switch(config-router)# neighbor 1.1.1.1 remote-as 2
Switch(config-router-neighbor)#
```

address-family

Enters neighbor address family configuration modes while configuring BGP routing.

Syntax

[no] **address-family** {**ipv4|ipv6**} **unicast**

where:

Parameter	Description
ipv4	Internet Protocol version 4.
ipv6	Internet Protocol version 6.
unicast	Unicast address support.

Using **no** before the command turns off this feature.

Modes

- BGP Configuration Mode
- BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following places the router in global address family configuration mode for the IPv4 unicast address family:

```
Switch(config-router-neighbor)# address-family ipv4 unicast
Switch(config-router-neighbor-af)#
```

advertisement-interval

Sets the minimum interval for sending BGP routing updates.

Syntax

[no] **advertisement-interval** *<time interval>*

where:

Parameter	Description
<time interval>	Advertisement time interval in seconds (a number from 1 to 65535). The default value is 5 seconds for IBGP and 30 seconds for EBGP.

Using **no** before the command restores the configuration to its default value.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the time interval:

```
Switch(config-router-neighbor)# advertisement-interval 10
```

bfd

Enables BFD for a BGP peer.

Syntax

[no] bfd [multihop]

where:

Parameter	Description
multihop	Configures the BFD session as multihop. Use this if the peer is multiple hops away.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following enables BFD on the current BGP neighbor:

```
Switch(config-router-neighbor)# bfd
```

connection-retry-time

Sets the connection retry time.

Syntax

[**no**] **connection-retry-time** *<time value>*

where:

Parameter	Description
<time value>	Connect timer in seconds (a number from 1 to 65535). The default value is 30.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the connection retry time:

```
Switch(config-router-neighbor)# connection-retry-time 120
```

description

Sets a description for the BGP peer.

Syntax

[no] **description** *<text>*

where:

Parameter	Description
<text>	Text description (a string from 1 to 80 alphanumeric characters).

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a BGP peer description:

```
Switch(config-router-neighbor)# description BGP peer
```

disallow-infinite-holdtime

Disallows configuration of infinite hold-time.

Syntax

[no] **disallow-infinite-holdtime**

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to disallow configuration of infinite holdtime:

```
Switch(config-router-neighbor)# disallow-infinite-holdtime
```

dont-capability-negotiate

Disables capabilities negotiation.

Syntax

[no] **dont-capability-negotiate**

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to disable capabilities negotiation:

```
Switch(config-router-neighbor)# dont-capability-negotiate
```

Restrictions

BGP sessions must be manually reset after configuring this feature.

dynamic-capability

Enables dynamic capability. The command triggers an automatic notification and resets session for the BGP neighbor sessions.

Syntax

[no] **dynamic-capability**

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable dynamic capability:

```
Switch(config-router-neighbor)# dynamic-capability
```

ebgp-multihop

Configures the eBGP time-to-live (TTL) value to support eBGP multihop.

Syntax

[no] **ebgp-multihop** *<maximum hop count>*

where:

Parameter	Description
<maximum hop count>	Maximum hop count number (a number from 1 to 255).

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure an ebgp multihop value of 10:

```
Switch(config-router-neighbor)# ebgp-multihop 10
```

local-as

Specifies AS number to use with BGP neighbor.

Syntax

[no] **local-as** *<number>* **[no-prepend [replace-as [dual-as**]]]

where:

Parameter	Description
<number>	AS number (a number from 1 to 4294967295).
no-prepend	Prepends only the configured local-as number.
replace-as	Establishes eBGP using real AS or configured local-as.
dual-as	AS number.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the local AS number:

```
Switch(config-router-neighbor)# local-as 100
```

maximum-peers

Specifies maximum number of peers for a prefix.

Syntax

[no] **maximum-peers** *<number>*

where:

Parameter	Description
<number>	Peer limit value (a number form 1 to 96).

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the maximum number of peers:

```
Switch(config-router-neighbor)# maximum-peers 40
```

password

Configures BGP to use MD5 authentication.

Syntax

[**no**] **password [0]** *<string>*

where:

Parameter	Description
0	Uses an un-encrypted key.
<string>	Password string.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a BGP password that will be stored in the local configuration file in an encrypted format:

```
Switch(config-router-neighbor)# password 1qaz2wsx
```

remote-private-AS

Removes private AS numbers from outbound route updates to an eBGP peer.

Syntax

[no] remote-private-AS

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets remote-private-AS:

```
Switch(config-router-neighbor)# remote-private-as
```

shutdown

Shuts down the neighbor. A session reset for the BGP neighbor sessions is performed.

Syntax

[no] shutdown

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to shut down a neighbor:

```
Switch(config-router-neighbor)# shutdown
```

timers

Configures the routing timers.

Syntax

[no] timers *<keep alive interval>* *<hold time>*

where:

Parameter	Description
<keep alive interval>	Time interval (in seconds) the switch awaits before sending another keepalive message to the BGP neighbor (a number from 0 to 3600). The default is 60.
<hold time>	Time interval (in seconds) the switch awaits before transitioning the BGP neighbor to IDLE state, if the switch doesn't receive an update or keepalive message from the neighbor (a number from 0 to 3600). The default is 180.

Using **no** before the command turns off this feature.

Modes

● BGP Configuration Mode
● BGP Neighbor Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure timers:

```
Switch(config-router-neighbor)# timers 120 360
```

transport

Configures the local system to not initiate TCP connections to this peer.

Syntax

[no] transport connection-mode passive

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to allow a single passive connection:

```
Switch(config-router-neighbor)# transport connection-mode passive
```

Restrictions

BGP speaker does not initiate a TCP connection to a BGP peer. You must manually reset the BGP sessions after configuring this command.

ttl-security

Sets the minimum number of TTL router hops an IP packet must have to not be discarded.

Syntax

[**no**] **ttl-security hops** *<number>*

where:

Parameter	Description
<number>	AS number (a number from 1 to 254).

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the minimum TTL value:

```
Switch(config-router-neighbor)# ttl-security hops 60
```

update-source

Sets the source of the BGP session and updates.

Syntax

[no] update-source {<*interface name*>**|ethernet** <*chassis number*>**| loopback** <*loopback interface number*>**|vlan** <*id*>**}**

where:

Parameter	Description
<*interface name*>	IP interface name.
ethernet <*chassis number*>	Ethernet chassis number.
loopback <*loopback interface number*>	Loopback interface value (a number from 0 to 7).
vlan <*id*>	VLAN interface number (a number from 1 to 4094).

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the update source:

```
Switch(config-router-neighbor)# update-source loopback 2
```

weight

Sets the default weight for routes from a specific neighbor.

Syntax

[no] **weight** *<number>*

where:

Parameter	Description
<number>	Weight value (a number from 0 to 65535).

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the default weight:

```
Switch(config-router-neighbor)# weight 5
```

Chapter 12. Neighbor Address Family Commands

This chapter describes the commands for entering and using BGP Neighbor Address Family mode.

address-family

Enters neighbor address family configuration modes while configuring BGP routing.

Syntax

[no] **address-family** {**ipv4|ipv6**} **unicast**

where:

Parameter	Description
ipv4	Internet Protocol version 4.
ipv6	Internet Protocol version 6.
unicast	Unicast address support.

Using **no** before the command turns off this feature.

Modes

- BGP Configuration Mode
- BGP Neighbor Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following places the router in global address family configuration mode for the IPv4 unicast address family:

```
Switch(config-router-neighbor)# address-family ipv4 unicast
Switch(config-router-neighbor-af)
```

allowas-in

Enables the allowas-in feature for BGP and configures the number of occurrences of the AS number.

Syntax

[no] **allowas-in [**<*number*>]

where:

Parameter	Description
<*number*>	Number of occurrences of AS number (a number from 1 to 10). The default value is 3.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# allowas-in
```

default-originate

Sets a BGP routing process to distribute a default route.

Syntax

[no] **default-originate [route-map** *<name>*]

where:

Parameter	Description
route-map *<number>*	Name of the route map.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# default-originate
```

filter-list

Configures AS-path access-list to BGP neighbor.

Syntax

`[no] filter-list` *<access-list name>* **`{in|out}`**

where:

Parameter	Description
<access-list name>	AS-path access-list name.
in	Applies the filter to incoming routes.
out	Applies the filter to outgoing routes.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to apply an AS-path filter to outgoing routes via AS path access-list ACL1:

```
Switch(config-router-neighbor-af)# filter-list ACL1 out
```

maximum-prefix

Controls how many prefixes can be received from a neighbor.

Syntax

[**no**] **maximum-prefix** *<number>* [*<threshold value>*] [**warning-only**]

where:

Parameter	Description
<number>	Maximum number of prefix limit (a number from 1 to 15870).
<threshold value>	The percentage of the maximum-prefix limit at which the router starts to generate a warning message. (a number from 1 to 100).
warning-only	Sends warning messages only when the limit is exceeded.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# maximum-prefix 5 warning-only
```

next-hop-self

Sets the local BGP speaker address as the next-hop address in route updates.

Syntax

[no] **next-hop-self**

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# next-hop-self
```

prefix-list

Configures prefix-list for BGP neighbor.

Syntax

[no] **prefix-list** *<name>* {**in|out**}

where:

Parameter	Description
<name>	Name of a prefix list.
in	Applies the filter to incoming routes.
out	Applies the filter to outgoing routes.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# prefix-list test in
```

route-map

Adds route-map in incoming or outgoing direction to the neighbor.

Syntax

[no] **route-map** *<name>* {**in|out**}

where:

Parameter	Description
<name>	Name of a route map.
in	Applies the filter to incoming routes.
out	Applies the filter to outgoing routes.

Using **no** before the command removes all route maps or a specific route map from in-route or out-route map list.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# route-map test in
```

route-reflector-client

Enables the peer as a route reflector client. Configuring route reflector clients, implicitly sets up the local router as a route reflector.

Syntax

[no] **route-reflector-client**

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# route-reflector-client
```

send-community

Enables sending a community attribute to a BGP neighbor.

Syntax

[no] **send-community [extended**]

where:

Parameter	Description
extended	Sends extended community attributes.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# send-community
```

soft-reconfiguration

Sets the switch software to start storing BGP peer updates.

Syntax

[no] **soft-reconfiguration inbound**

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# soft-reconfiguration
```

unsuppress-map

Sets route map to selectively unsuppress suppressed routes.

Syntax

[no] **unsuppress-map** *<name>*

where:

Parameter	Description
<name>	Name of a route map.

Using **no** before the command turns off the feature.

Modes

BGP Neighbor Address Family Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router-neighbor-af)# unsuppress-map test
```

Chapter 13. OSPF Configuration Mode Commands

These commands enter you into an advanced configuration mode for configuring the Open Shortest Path First (OSPF) routing instances.

router ospf

Configures an Open Shortest Path First (OSPF) routing instance and enters the OSPF configuration mode.

Syntax

[no] router ospf

Using **no** before the command terminates an OSPF routing process.

Mode

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command shows how to enter OSPF configuration mode:

```
Switch(config)# router ospf
Switch(config-router)#
```

area <area id> authentication

Enables authentication for a specific area.

Syntax

[no] **area** *<area id>* **authentication [message-digest]**

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
message-digest	Enables MD5 authentication.

Using **no** before the command removes the authentication for a specific area.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable authentication for a specific area:

```
Switch(config-router)# area 1.1.1.1 authentication
```

area <area id> default-cost

Sets a cost for the default summary route sent into a stub or NSSA area.

Syntax

[no] **area** *<area id>* **default-cost** *<cost value>*

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
<cost value>	Stub's advertised default summary cost (a number from 0 to 16777215).

Using **no** before the command removes the assigned default-cost route.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a cost:

```
Switch(config-router)# area 1.1.1.1 default-cost 1000
```

Restrictions

Use this command only on an area border router that is attached to the NSSA or stub area.

area <area id> filter-list

Sets a filter to advertise summary routes on an Area Border Router (ABR). This command suppresses incoming and outgoing summary routes between the specified area and others.

Syntax

[no] **area** *<area id>* **filter-list route-map** *<map name>* {**in**|**out**}

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
route-map *<map name>*	Name of the route map.
in	Applies the filter to incoming routes.
out	Applies the filter to outgoing routes.

Using **no** before the command removes a filter.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to apply an area filter to incoming routes:

```
Switch(config-router)# area 1.1.1.1 filter-list route-map test in
```

area <area id> nssa

Sets an area as a Not-So-Stubby-Area (NSSA).

Syntax

[no] **area** *<area id>* **nssa [default-information-originate [metric**
<metric value>]**[metric-type** *<metric type value>*] **[route-map** *<map-name>*]]
[no-redistribution] **[no-summary**] **[translate type7 always**]
[stability-interval *<value>*]

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
default-informatio n-originate	Generates a Type7 default into the NSSA area.
metric *<metric value>*	OSPF default metric value (a number from 0 to 16777214).
metric-type *<metric type value>*	OSPF metric type for default routes (a number from 1 to 2).
route-map *<map name>*	Name of the route map.
no-redistribution	Blocks redistributed link-state advertisements (LSAs) from entering this NSSA area.
no-summary	Allows an area to be an NSSA area. Summay routes are not injected into it.
translate type7 always	Always translates Type 7 LSAs to type 5 LSAs.
stability-interval *<value>*	Time interval in seconds (a number from 0 to 2147483647).

Using **no** before the command removes this setting.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a NSSA area:

```
Switch(config-router)# area 1.1.1.1 nssa
```

Restrictions

- You cannot redistribute from another protocol into a stub area.
- An area can be configured to be either a stub area or an NSSA, but not both.

area <area id> range

Sets the OSPF summary range.

Syntax

[no] **area** *<area-id>* **range** *<ip prefix>*/*<netnum>* *<mask>*
[advertise|not-advertise]

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
<ip prefix>	IPv4 address prefix.
<netnum>	Subnet mask length.
<mask>	Area range prefix mask.
advertise	Advertises a specific range.
not-advertise	Does not advertise a specific range.

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets OSPF summary range:

```
Switch(config-router)# area 1.1.1.1 range 1.1.1.1 255.0.0.0 advertise
```

area <area id> stub

Sets an area as a stub area.

Syntax

[no] **area** *<area id>* **stub [no-summary]**

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
no-summary	Sets a totally stubby area. Apply this command when routers in the area do not need to learn about summary LSAs from other areas.

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a stub area:

```
Switch(config-router)# area 1.1.1.1 stub
```

area <area id> virtual-link

Configures a virtual link between two backbone areas that are physically separated by a non-backbone area.

Enters the virtual link configuration mode.

Syntax

[no] **area** *<area id>* **virtual-link** *<IP address>*

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
<IP address>	The router ID of the virtual link neighbor.

Using **no** before the command removes a virtual link.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure a virtual link:

```
Switch(config-router)# area 1.1.1.1 virtual-link 255.0.0.0
```

auto-cost reference-bandwidth

Controls how OSPF calculates the default metric for the interface.

Syntax

`auto-cost reference-bandwidth {``<Gbps bandwidth>`**`|`**`<Mbps bandwidth>`**`}`**
`[gbps|mbps]`

`no auto-cost reference-bandwidth`

where:

Parameter	Description
<Gbps bandwidth>	Bandwidth for Gbps (a number from 1 to 4294).
<Mbps bandwidth>	Bandwidth for Mbps (a number from 1 to 4294967).
gbps	The reference bandwidth in terms of gigabits per second.
mbps	The reference bandwidth in terms of megabits per second.

Using **no** before the command assigns cost based only on the interface bandwidth.

Note: If no value is provided, gbps is used by default.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to control OSPF bandwidth:

```
Switch(config-router)# auto-cost reference-bandwidth 2000 gbps
```

Restrictions

For multiple links with high bandwidth, please specify a larger reference bandwidth value to differentiate cost on those links.

bfd

Enables BFD on all interfaces.

Syntax

[**no**] **bfd**

Using **no** before the command turns off the feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable BFD:

```
Switch(config-router)# bfd
```

default-information originate

Creates a default external route into an OSPF routing domain.

Syntax

[no] default-information originate [always] [metric *<metric value>***] [metric-type** *<metric type value>***] [route-map** *<map-name>***]**

where:

Parameter	Description
always	Always advertise default route.
metric *<metric value>*	OSPF default metric value (a number from 0 to 16777214).
metric-type *<metric type value>*	OSPF metric type for the default route (a number from 1 to 2).
route-map *<map name>*	Name of the route map.

Using **no** before the command turns off the feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to create a default external route:

```
Switch(config-router)# default-information originate route-map test
```

Restrictions

When using this command, you should specify a route-map to avoid a dependency on the default network in the routing table.

default-metric

Configures a default metric for OSPF external LSA. Use this command to have the same metric value for all redistributed routes.

Syntax

[no] **default-metric** *<value>*

where:

Parameter	Description
<value>	Default metric value (a number from 1 to16777214).

Using **no** before the command returns the configuration to the default state.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a default metric for OSPF external LSA:

```
Switch(config-router)# default-metric 3000
```

distance

Configures OSPF administrative distance.

Syntax

[no] **distance** *<value>*

where:

Parameter	Description
<value>	Distance value. The default is 110.

Using **no** before the command restores the distance to its default value.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets distance :

```
Switch(config-router)# distance 120
```

Restrictions

A higher distance value means a lower trust rating (e.g., an administrative distance of 255 means that the routing information source cannot be trusted and should be ignored).

enable db-summary-op

Enables OSPF Database Summary Optimization. This feature is enabled by default.

Syntax

[no] enable db-summary-op

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable this feature:

```
Switch(config-router)# enable db-summary-op
```

log-adjacency-changes

Configures the router to send a syslog message whenever the state of an OSPF neighbor changes.

Syntax

[no] **log-adjacency-changes [detail**]

where:

Parameter	Description
detail	Logs all state changes.

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a syslog message:

```
Switch(config-router)# log-adjacency-changes
```

max-concurrent-dd

Configures the number of neighbors that can negotiate adjacency at the same time.

Syntax

[no] max-concurrent-dd *<value>*

where:

Parameter	Description
<value>	Number of DD processes (a number from 1 to 32). The default value is 5.

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets this feature:

```
Switch(config-router)# max-concurrent-dd 10
```

overflow

Sets the maximum number of LSAs that can be installed in LSDB. The feature is disabled by default.

Syntax

[no] overflow database {*<max lsas>***[hard|soft]**|**external** *<max lsas>* *<recovery time>*}

where:

Parameter	Description
<max lsas>	Maximum number of LSAs (a number from 1 to 4294967294).
hard	Shutdowns the instance if the limit is exceeded.
soft	Sends a warning message if the limit is exceeded.
external *<max lsas>*	External link maximum number of LSAs (a number from 1 to 2147483647).
<recovery time>	Time to recover, in seconds (a number from 0 to 65535).

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure this feature:

```
Switch(config-router)# overflow database 400 soft
```

redistribute

Redistributes routes from a routing protocol, static route, and connected routes into an OSPF routing table.

Syntax

`redistribute {bgp|direct|static} [metric <metriv value>]`
`[metric-type <metric type value>] [route-map <map-name>] [tag <tag`
`value>]`

`no redistribute {bgp|direct|static} [metric|metric-type|`
`route-map|tag]`

where:

Parameter	Description
`bgp`	Routes belonging to BGP protocol.
`direct`	Routes directly connected on an interface.
`static`	IP static routes.
`metric` *<metric value>*	OSPF default metric value (a number from 0 to 16777214).
`metric-type` *<metric type value>*	OSPF metric type for default routes (a number from 1 to 2).
`route-map` *<map name>*	Name of the route map.
`tag` *<tag value>*	Tag value (a number from 0 to 4294967295).

Using **no** before the command turns off the feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable redistribution of routes into an OSPF routing table:

```
Switch(config-router)# redistribute bgp metric 100
```

rfc1583compatibility

Enables the RFC1583 compatibility flag and changes how summary and external routes are calculated.

Syntax

[no] `rfc1583compatibility`

Using **no** before the command turns off this feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable RFC 1583 compatibility:

```
Switch(config-router)# rfc1583compatibility
```

router-id

Manually defines the router ID for a OSPF speaker.

Syntax

[no] router-id *<IP address>*

where:

Parameter	Description
<IP address>	Router identifier.

Using **no** before the command reverts to the previous router ID behavior.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure the router ID:

```
Switch(config-router)# router-id 1.1.1.1
```

shutdown

Disables the OSPF process.

The **no** form of the command enables the OSPF process.

Syntax

```
[no] shutdown
```

Modes

OSPF Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the OSPF process:

```
Switch(config-router)# no shutdown
```

summary-address

Summarizes or suppresses external routes with the specified address range.

Syntax

[no] **summary-address** {*<ip address>***|** *<ip-prefix/length>* *<ip mask>*}
[not-advertise] **[tag** *<tag value>*]

where:

Parameter	Description
<ip address>	IP summary prefix.
<ip-prefix/length>	IP summary prefix/length.
<ip mask>	IP summary prefix mask.
not-advertise	Suppresses routes that match the specified prefix.
tag *<tag value>*	Tag value (a number from 0 to 4294967295).

Using **no** before the command turns off the feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets summary address:

```
Switch(config-router)# summary-address 255.0.0.0/8 tag 19
```

timers lsa-arrival

Sets the minimum interval for accepting the same LSA from OSPF neighbors.

Syntax

[no] **timers lsa-arrival** *<delay value>*

where:

Parameter	Description
<delay value>	Minimum delay time, in milliseconds (a number from 10 to 600000). The default value is 1000.

Using **no** before the command restores the default value.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the lsa timer:

```
Switch(config-router)# timers lsa-arrival 2000
```

timers throttle lsa

Sets rate limiting values for OSPF LSA.

Syntax

timers throttle lsa *<start time> <hold interval> <max time>*

no timers throttle lsa

where:

Parameter	Description
<start time>	Starting delay for LSA generation calculation, in milliseconds (a number from 0 to 5000). The default value is 0.
<hold interval>	Incremental delay for LSA generation calculation, in milliseconds (a number from 50 to 30000). The default value is 5000.
<max time>	Maximum delay for LSA generation calculation, in milliseconds (a number from 50 to 30000). The default value is 5000.

Using **no** before the command restores the default values.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure rate limiting values for OSPF LSA:

```
Switch(config-router)# timers throttle lsa 100 6000 8000
```

timers throttle spf

Sets the SPF best-path schedule initial delay time and the minimum hold between SPF best-path calculation for OSPF.

Syntax

[**no**] **timers throttle spf** *<initial time> <min time> <max time>*

where:

Parameter	Description
<initial time>	Initial SPF scheduled delay, in milliseconds (a number from 1 to 600000).
<min time>	Minimum delay between two consecutive SPF calculations (a number from 1 to 600000).
<max time>	Maximum delay between two consecutive SPF calculations, in milliseconds (a number from 1 to 600000).

Using **no** before the command turns off the feature.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets SPF timers:

```
Switch(config-router)# timers throttle spf 200 400 1000
```

Chapter 14. Virtual Link Mode Commands

This chapter describes the commands for entering and using OSPF Virtual Link mode.

area <area id> virtual-link

Configures a virtual link between two backbone areas that are physically separated by a non-backbone area.

Enters the virtual link configuration mode.

Syntax

[no] **area** *<area id>* **virtual-link** *<IP address>*

where:

Parameter	Description
<area id>	Decimal value (a number from 0 to 4294967295) or IP address.
<IP address>	IPv4 address associated with virtual link neighbor.

Using **no** before the command removes a virtual link.

Modes

OSPF Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure a virtual link:

```
Switch(config-router)# area 1.1.1.1 virtual-link 255.0.0.0
```

authentication

Sets an authentication type between virtual-link neighbors.

Syntax

[no] **authentication [message-digest|null**]

where:

Parameter	Description
message-digest	Enables MD5 authentication.
null	Null authentication.

Using **no** before the command removes a virtual link authentication type.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets an authentication type:

```
Switch(config-router-vlink)# authentication
```

authentication-key

Sets an authentication key between virtual-link neighbors.

Syntax

[no] **authentication-key [0]** *<string>*

where:

Parameter	Description
0	Uses an un-encrypted key.
<string>	Password string.

Using **no** before the command removes a virtual link authentication.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets an authentication between virtual link neighbors:

```
Switch(config-router-vlink)# authentication-key password
```

dead-interval

Sets the health parameters of a hello packet, in seconds, before declaring a silent router to be down.

Syntax

[no] **dead-interval** *<seconds>*

where:

Parameter	Description
<seconds>	Time interval (a number from 1 to 65535). The default value is 40 seconds.

Using **no** before the command restores the default time.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets a dead interval value:

```
Switch(config-router-vlink)# dead-interval 120
```

hello-interval

Sets the interval, in seconds, between the hello packets.

Syntax

[no] **hello-interval** *<seconds>*

where:

Parameter	Description
<seconds>	Time interval (a number from 1 to 65535). The default value is 10 seconds.

Using **no** before the command restores the default time.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the interval between hello packets:

```
Switch(config-router-vlink)# hello-interval 50
```

message-digest-key

Configures a MD5 key on a virtual link for MD5 authentication.

Syntax

[no] message-digest-key *<key id>* **md5 [0]** *<password>*

where:

Parameter	Description
<key id>	Key Identifier (a number from 1 to 255).
md5	MD5 authentication.
0	Uses an un-encrypted key.
<password>	Password string.

Using **no** before the command removes a previous configured password.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable MD5 authentication on a virtual link:

```
Switch(config-router-vlink)# message-digest-key 1 md5 myPassword
```

retransmit-interval

Configures the interval in seconds, between LSA retransmissions for adjacencies belonging to the virtual link.

Syntax

[no] **retransmit-interval** *<seconds>*

where:

Parameter	Description
<seconds>	Time interval (a number from 1 to 65535). The default value is 1 seconds.

Using **no** before the command restores the default time.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the retransmit-interval value:

```
Switch(config-router-vlink)# retransmit-interval 100
```

transmit-delay

Configures the estimated time, in seconds, taken to transmit LS update packet over the specified virtual link.

Syntax

[no] **transmit-delay** *<seconds>*

where:

Parameter	Description
<seconds>	Time interval (a number from 1 to 3600). The default value is 5 seconds.

Using **no** before the command restores the default time.

Modes

OSPF Virtual Link Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following sets the transmit delay value:

```
Switch(config-router-vlink)# transmit-delay 100
```

Chapter 15. TACACS+ Server Mode Commands

This chapter explains how to enter TACACS+ Server Configuration Mode and the commands within that mode.

Note: TACACS+ has the following restrictions:

- Username: maximum 32 characters, only lowercase letters and numbers; must start with a letter.
- Password: maximum 255 characters, including uppercase lowercase numbers and special characters.

aaa group server tacacs+

Creates or deletes a group of Terminal Access Controller Access-Control System Plus (TACACS+) servers for Authentication, Authorization and Accounting (AAA). After creating a group, you enter TACACS+ server configuration mode for that group.

Syntax

[no] aaa group server tacacs+ *<server group name>*

where:

Parameter	Function
server group name	The name of the TACACS+ server group. The *server group name* can be up to 127 characters in length, must start with a letter, and must contain only lowercase letters and numbers.

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates TACACS+ server group 'tacacs-group-1':

```
Switch(config)# aaa group server tacacs+ tacacs-group-1
Switch(config-tacacs)#
```

server

Adds or removes a server to or from the current Terminal Access Controller Access-Control System Plus (TACACS+) group.

Syntax

[no] server *<server address>*

where:

Parameter	Function
server address	The IPv4 or IPv6 address of the TACACS+ server.

Modes

TACACS+ Server Group Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds a TACACS+ server to the current group:

```
Switch(config-tacacs)# server 10.190.45.76
```

use-vrf

Sets the Virtual Routing and Forwarding (VRF) instance for this group. Only users who login from an interface that is in this VRF instance will have a chance to login. Other users will get a timeout when trying to authenticate to the servers.

Syntax

[no] use-vrf {default|management}

where:

Parameter	Function
default	Configures the TACACS+ group to use the default VRF instance.
management	Configures the TACACS+ group to use the management VRF instance.

Modes

TACACS+ Server Group Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the current group to use the default VRF instance:

```
Switch(config-tacacs)# use-vrf default
```

Chapter 16. LDAP Mode Commands

This chapter describes how to enter Lightweight Directory Access Protocol (LDAP) Configuration Mode and the commands in the LDAP modes:

- LDAP Profile Configuration Mode
- LDAP Configuration Mode

feature ldap

Enables the LDAP feature.

Syntax

[no] feature ldap

Using **no** before the command disables the LDAP feature.

Modes

Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following enables the LDAP feature:

```
Switch(config)# feature ldap
```

ldap-server profile

Configures LDAP profile information and enters LDAP Profile Configuration mode.

Syntax

ldap-server profile <*profile name***>**

where:

Parameter	Description
profile name	The profile name; a string of maximum 16 characters.

Modes

Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to configure LDAP profile information and enter LDAP Configuration mode:

```
Switch(config)# ldap-server profile test
Switch(config-ldap-profile)#
```

attribute

Configures customized LDAP attributes.

Syntax

```
[no] attribute {group <group name>|permission-name <permission
name>|
permission-value {bitmap|role}{admin|deny|oper} {<name>}|
username <username value>}
```

where:

Parameter	Description
group name	LDAP group attribute; a string of maximum 64 characters.
permission-name *<permission name>*	LDAP permission attribute; a string of maximum 32 characters. If no value is configured, the switch automatically uses the default value LenovoNetworkPermission.
bitmap	Permission string bitmap. One of: ● admin: 0100000000000000 ● oper: 0010000000000000 ● deny: 1000000000000000
role	Role-Based Access Control (default). One of: ● admin: cn=classC,ou=Groups,dc=my-domain,dc=com ● oper: cn=classD,ou=Groups,dc=my-domain,dc=com ● deny: cn=classE,ou=Groups,dc=my-domain,dc=com
admin	LDAP server attribute administrator permission.
deny	LDAP server attribute deny permission.
oper	LDAP server attribute operator permission.
name	The bitmap or permission value name; a string of maximum 16 characters.
username *<username value>*	The customized LDAP username; a string of maximum 32 characters. If no value is configured, the switch automatically uses the default value uid.

Using **no** before the command deletes a specific attribute.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set a customized LDAP username:

```
Switch(config-ldap-profile)# attribute username test
```

authorization

Configures the local authorization method.

Syntax

[no] authorization {rbac|bitmap}

where:

Parameter	Description
rbac	Role-Based Access Control (default).
bitmap	Permission string bitmap.

Using **no** before the configured local authorization method.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set the RBAC authorization method:

```
Switch(config-ldap-profile)# authorization rbac
```

base-dn

Configures the LDAP distinguished name (DN).

Syntax

[no] base-dn *<distinguished name>*

where:

Parameter	Description
distinguished name	The name of the DN; a string of maximum 128 characters.

Using **no** before the command deletes a specific DN.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to delete a DN:

```
Switch(config-ldap-profile)# no base-dn test
```

bind-mode

Defines a LDAP binding method.

Syntax

[no] bind-mode {prompted|predefined}

where:

Parameter	Description
prompted	LDAP server predefined bind mode.
predefined	LDAP server prompted bind mode.

Using **no** before the command disables a specific binding method.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable prompted binding method:

```
Switch(config-ldap-profile)# bind-mode prompted
```

group-filter

Defines a LDAP group filter.

Syntax

[no] group-filter *<words>*

where:

Parameter	Description
words	The group filter string for searching; a string of maximum 256 characters.

Using **no** before the command deletes a specific group filter.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to delete a specific group filter:

```
Switch(config-ldap-profile)# no group-filter test1
```

host

Configures LDAP server IPv4 or IPv6 address.

[no] host {<IPv4 address>**|**<hostname>**|**<IPv6>** [interface {ethernet**
<1-1>**|mgmt 0}]}**

where:

Parameter	Description
IPv4 address	The name of the IPv4 address.
hostname	The host name or DNS name of the LDAP server.
IPv6 address	The name of the IPv6 address.
interface ethernet <1-1>	Ethernet interface used when connecting to LDAP server IPv6 link local address. The chassis number is 1 and the port number depends on the switch type.
interface mgmt *0*	Management interface used when connecting to LDAP server IPv6 link local address.

Using **no** before the command deletes a configured host address.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set LDAP server IPv4 address:

```
Switch(config-ldap-profile)# host 1.1.1.1
```

pki

Configures Public Key Infrastructure (PKI) to use for a LDAP profile.

Syntax

[no] pki *<name>*

where:

Parameter	Description
name	The name of the PKI; a string of maximum 16 characters. If no value is configured, the switch automatically uses the global PKI.

Using **no** before the command deletes a specific PKI name.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable a specific PKI name:

```
Switch(config-ldap-profile)# pki test1
```

port

Defines the TCP port to use for LDAP.

Syntax

[no] port *<port number>*

where:

Parameter	Description
port number	The TCP port number; an integer from 1-65535. If no value is set, the switch automatically uses the default TCP port 389.

Using **no** before the command deletes a specific assigned port number.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to assign a specific port number to LDAP:

```
Switch(config-ldap-profile)# port 45
```

predefined-credential

Specifies LDAP server predefined-credential information.

Syntax

[no] predefined-credential {dn *<dn name>***|key [0|7|]** *<key name>***}**

where:

Parameter	Description
dn *<dn name>*	The DN for binding with LDAP server; a string of maximum 256 characters.
key [0|7|] *<key name>*	The DN password; a string of maximum 64 characters. Use **0** for clear-form text or **7** for encrypted text.

Using **no** before the command deletes specific predefined credentials.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set an encrypted DN password:

```
Switch(config-ldap-profile)# predefined-credential dn test1
Switch(config-ldap-profile)# predefined-credential key 7 welcome!
```

retransmit

Defines the retransmission counter for LDAP connections.

Syntax

[no] retransmit *<counter>*

where:

Parameter	Description
counter	The value of the retransmit counter; an integer from 1-5. The default value is 1.

Using **no** before the command resets the setting to its default value.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how set a retransmit LDAP counter:

```
Switch(config-ldap-profile)# retransmit 2
```

security

Defines the LDAP transmit mode and security options.

Syntax

`security {ldaps [ignore]|startTLS [ignore]|clear}`

where:

Parameter	Description
ldaps	Secure LDAP.
ignore	No LDAP client identity check of the peer.
startTLS	Transport layer security (TLS).
clear	Clear text.

Using **no** before the command disables a specific security check.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable TLS security check:

```
Switch(config-ldap-profile)# security startTLS
```

timeout

Defines the LDAP server time out.

Syntax

[no] timeout *<seconds>*

where:

Parameter	Description
seconds	The time out interval (in seconds); an integer from 1-60. The default value is 10.

Using **no** before the command resets the setting to its default value.

Modes

LDAP Profile Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to set a time out interval:

```
Switch(config-ldap-profile)# timeout 20
```

aaa group server ldap

Creates or deletes a group of Lightweight Directory Access Protocol servers for Authentication and Authorization. After creating a group, you enter LDAP server configuration mode for that group.

Syntax

[no] aaa group server ldap *<server group name>*

where:

Parameter	Description
server group name	The name of the LDAP server group. The server group name can be up to 127 characters, it must start with a letter, and it must contain only lowercase letters and numbers.

Modes

Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following shows how to enable a LDAP group:

```
Switch(config)# aaa group server ldap test
Switch(config-ldap)#
```

server

Adds or removes a server to or from the current LDAP group.

Syntax

[no] server *<name>*

where:

Parameter	Function
name	The service profile name.

Modes

LDAP Server Group Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command adds a LDAP server to the current group:

```
Switch(config-ldap)# server test
```

use-vrf

Sets the Virtual Routing and Forwarding (VRF) instance for this group. Only users who login from an interface that is in this VRF instance will have a chance to login. Other users will get a timeout when trying to authenticate to the servers.

Syntax

[no] use-vrf {<*name*>|default|management}

where:

Parameter	Function
name	Configures the LDAP group to use the VRF instance name.
default	Configures the LDAP group to use the default VRF instance.
management	Configures the LDAP group to use the management VRF instance.

Modes

LDAP Server Group Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command configures the current group to use the default VRF instance:

```
Switch(config-ldap)# use-vrf default
```

Chapter 17. RADIUS Server Mode Commands

This chapter explains how to enter RADIUS Server Configuration Mode and the commands within that mode.

Note: RADIUS has the following restrictions:

- Username: maximum 32 characters, only lowercase letters and numbers; must start with a letter.
- Password: maximum 255 characters, including uppercase lowercase numbers and special characters.

aaa group server radius

Creates or deletes a group of Remote Authentication Dial-In User Service (RADIUS) servers for Authentication, Authorization and Accounting (AAA). After creating a group, you enter RADIUS server configuration mode for that group.

Syntax

[no] aaa group server radius *<server group name>*

where:

Parameter	Function
server group name	The name of the RADIUS server group. The *server group name* can be up to 127 characters, it must start with a letter, and it must contain only lowercase letters and numbers.

Modes

Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command creates RADIUS server group 'radius-group-1':

```
Switch(config)# aaa group server radius radius-group-1
Switch(config-radius)#
```

server

Adds or removes a server to or from the current Remote Authentication Dial-In User Service (RADIUS) group.

Syntax

[no] server *<server address>*

where:

Parameter	Function
server address	The IPv4 or IPv6 address of the RADIUS server.

Modes

RADIUS Server Group Configuration mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command adds a RADIUS server to the current group:

```
Switch(config-radius)# server 10.190.45.76
```

source-interface

Configures the source switch interface to be used to connect to the Remote Authentication Dial-In User Service (RADIUS) server.

Syntax

[no] source-interface {<interface name>**|loopback** <loopback interface>**| |mgmt 0|vlan** <VLAN ID>**}**

where:

Parameter	Function
interface name	Configures the switch interface identified by its name to be used to connect to the RADIUS server.
loopback *loopback interface*	Configures the specified loopback interface to be used to connect to the RADIUS server. The *loopback interface* is from 0 to 7.
mgmt 0	Configures the management interface to be used to connect to the RADIUS server.
vlan *VLAN ID*	Configures the specified VLAN to be used to connect to the RADIUS server. The *VLAN ID* is from 1 to 4094.

Modes

RADIUS Server Group Configuration mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures VLAN 105 as the source interface to be used to connect to the RADIUS server:

```
Switch(config-radius)# source-interface vlan 105
```

use-vrf

Sets the Virtual Routing and Forwarding (VRF) instance for this group. Only users who login from an interface that is in this VRF instance will have a chance to login. Other users will get a timeout when trying to authenticate to the servers.

Syntax

[no] use-vrf {default|management}

where:

Parameter	Function
default	Configures the RADIUS group to use the default VRF instance.
management	Configures the RADIUS group to use the management VRF instance.

Modes

RADIUS Server Group Configuration mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the current group to use the default VRF instance:

```
Switch(config-radius)# use-vrf default
```

Chapter 18. SPAN Session Mode Commands

This chapter describes how to enter SPAN Session Configuration Mode and the commands in this mode.

monitor session

Adds or removes a Switch Port Analyzer (SPAN) session. After the creation of a SPAN session, enters SPAN Session Configuration Mode.

Syntax

[**no**] **monitor session** *<session number>*

where:

Parameter	Function
session number	The SPAN session number. The *session number* is from 1 to 18.

The **no** version of this command with the argument **all** removes all SPAN sessions:

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds a SPAN session:

```
Switch(config)# monitor session 7
```

description

Adds or removes a short description of the current Switch Port Analyzer (SPAN) session.

Syntax

[**no**] **description** *<description>*

where:

Parameter	Function
description	The description string of the SPAN session. The *description* can be up to 32 characters in length.

Modes

SPAN Session Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command describes the current SPAN session as 'SPAN session 3':

```
Switch(config-monitor)# description SPAN session 3
```

destination

Adds or removes a destination interface for the current Switch Port Analyzer (SPAN) session.

Syntax

[**no**] **destination interface** {**ethernet** *<chassis number/port number>*| **port-channel** *<LAG number>*}

where:

Parameter	Function
ethernet *chassis number/port number*	Sets the specified ethernet interface as the SPAN session destination interface. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Sets the specified Link Aggregation Group (LAG) as the SPAN session destination interface. The *VLAN number* is from 1 to 4096.

Modes

SPAN Session Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets ethernet interface 1/8 as the SPAN session destination interface:

```
Switch(config-monitor)# destination interface ethernet 1/8
```

shut

Configures the Switch Port Analyzer (SPAN) session as being shut down for monitoring.

Using the **no** form of the command configures the SPAN session as not being shut down for monitor.

Syntax

[**no**] **shut**

Modes

SPAN Session Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures the SPAN session as being shut down:

```
Switch(config-monitor)# shut
```

source

Adds or removes a source interface for the current Switch Port Analyzer (SPAN) session.

Syntax

[**no**] **source interface** {**ethernet** *<chassis number**/**port number>*| **port-channel** *<LAG number>*}

where:

Parameter	Function
`ethernet` *chassis number**/**port number*	Sets the specified ethernet interface as the SPAN session source interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`port-channel` *LAG number*	Sets the specified Link Aggregation Group (LAG) as the SPAN session source interface. The *VLAN number* is from 1 to 4096.

Modes

SPAN Session Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets ethernet interface 1/8 as the SPAN session source interface:

```
Switch(config-monitor)# source interface ethernet 1/8
```

Chapter 19. Control Plane Mode Commands

This chapter describes how to enter Control Plane Configuration Mode and the commands available in this mode.

control-plane

Enters Control Plane Configuration mode.

Syntax

`control-plane`

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters Control Plane Configuration Mode:

```
Switch(config)# control-plane
```

service-policy

Defines the control plane service policy.

Syntax

service-policy input *copp-system-policy*

where:

Parameter	Function
input	Defines the ingress service policy.
copp-system-policy	The name of the control plane service policy.

Modes

Control Plane Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command defines the control plane ingress service policy as copp-system-policy:

```
Switch(config-cp)# service-policy input copp-system-policy
```

Chapter 20. Key Chain Mode Commands

This chapter describes commands for configuring authentication keychains and keys.

key chain

Adds an authentication keychain and enters Key Chain Configuration mode.

Syntax

[no] key chain *<key chain name>*

where:

Parameter	Function
key chain name	The name of the authentication keychain.

Using **no** before this command removes the authentication keychain.

Modes

- Configuration Mode
- Key Chain Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds an authentication keychain named 'kc-30':

```
Switch(config)# key chain kc-30
```

key

Adds or removes an authentication key. After creating an authentication key, the user enters Key Configuration mode.

Syntax

[no] **key** *<key ID>*

where:

Parameter	Function
key ID	The authentication key identification number. The *key ID* is from 0 to 2147483647.

Modes

- Key Chain Configuration Mode
- Key Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds an authentication key '1900':

```
Switch(config-keychain)# key 1900
```

accept-lifetime

Configures the time interval during which the authentication key on the key chain is accepted as valid when received.

The earliest acceptable starting date is January 1, 1993.

Syntax

```
[no] accept-lifetime <start time> <start day> <start month> <start year>
{<end time> <end day> <end month> <end year>|duration <duration>|
infinite}
```

where:

Parameter	Function
start time	The key is considered valid starting with this time. The *start time* format is *HH:mm:ss*, where: ● *HH* is the hour of the day (range is 00 to 24) ● *mm* is the minute of the hour (range is 00 to 60) ● *ss* is the second of the minute (range is 00 to 60)
start day	The key is considered valid starting with this day. The *start day* is from 1 to 31. Default value is 1.
start month	The key is considered valid starting with this month. The *start month* is from January to December. Default value is 1.
start year	The key is considered valid starting with this year. The *start year* is from 1993 to 2035. Default value is 1993.
end time	The key is considered valid until this time. The *end time* format is *HH:mm:ss*, where: ● *HH* is the hour of the day (range is 00 to 24) ● *mm* is the minute of the hour (range is 00 to 60) ● *ss* is the second of the minute (range is 00 to 60)
end day	The key is considered valid until this day. The *end day* is from 1 to 31.
end month	The key is considered valid until this month. The *end month* is from January to December.
end year	The key is considered valid until this year. The *end year* is from 1993 to 2035.
duration *duration*	The key is valid for specified amount of seconds. The *duration* is from 1 to 2147483646.
infinite	The key never expires.

Using the **no** form of the command resets the accept lifetime interval to its default value.

Modes

Key Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures an authentication key to be valid from January 20, 2016 starting at 8 AM for one year, as specified in seconds:

```
Switch(config-keychain-key)# accept-lifetime 8:0:0 30 January 2016
duration 31536000
```

key-string

Adds or removes an authentication key string. The key string must be included in sent or received packets by the routing protocol being authenticated.

Syntax

[no] key-string *<key string>*

where:

Parameter	Function
key string	The *key string* can be up to 80 alphanumeric characters in length.

Modes

Key Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command adds the string 'key01' to the current authentication key:

```
Switch(config-keychain-key)# key-string key01
```

send-lifetime

Configures the time interval during which the authentication key on the key chain is valid when sent.

The earliest acceptable starting date is January 1, 1993.

Syntax

[no] send-lifetime *<start time> <start day> <start month> <start year>* **{***<end time> <end day> <end month> <end year>***|duration** *<duration>***|infinite}**

where:

Parameter	Function
start time	The key is considered valid starting with this time. The *start time* format is *HH:mm:ss*, where: ● *HH* is the hour of the day (range is 00 to 24) ● *mm* is the minute of the hour (range is 00 to 60) ● *ss* is the second of the minute (range is 00 to 60)
start day	The key is considered valid starting with this day. The *start day* is from 1 to 31. Default value is 1.
start month	The key is considered valid starting with this month. The *start month* is from January to December. Default value is January.
start year	The key is considered valid starting with this year. The *start year* is from 1993 to 2035. Default value is 1993.
end time	The key is considered valid until this time. The *end time* format is *HH:mm:ss*, where: ● *HH* is the hour of the day (range is 00 to 24) ● *mm* is the minute of the hour (range is 00 to 60) ● *ss* is the second of the minute (range is 00 to 60)
end day	The key is considered valid until this day. The *end day* is from 1 to 31.
end month	The key is considered valid until this month. The *end month* is from January to December.
end year	The key is considered valid until this year. The *end year* is from 1993 to 2035.
duration *duration*	The key is valid for specified amount of seconds. The *duration* is from 1 to 2147483646.
infinite	The key never expires.

Using the **no** form of the command resets the send lifetime interval to its default value.

Modes

Key Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures an authentication key to be valid from January 30, 2016, starting at 8 AM, for one year, as specified in seconds:

```
Switch(config-keychain-key)# send-lifetime 8:0:0 30 January 2016 duration
31536000
```

Chapter 21. IP ACL Mode Commands

This chapter describes the commands available to configure IP Access Control Lists (ACL).

ip access-list

Adds or removes an Access Control List (ACL). After creating an ACL, you enter IP ACL Configuration Mode.

Syntax

[no] ip access-list *<ACL name>*

where:

Parameter	Function
ACL name	The name of ACL.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates an ACL named `acl-03`:

```
Switch(config)# ip access-list acl-03
```

deny

Enables or disables the discarding of packets.

Syntax

[no] [<*ACL sequence number*>**] deny {**<*IANA protocol number*>**|ahp|any| eigrp|esp|gre|icmp|igmp|ip|nos|ospf|pcp|pim|tcp|udp} {**<*source address*>**|any|host** <*single source address*>**} {**<*destination address*>**|any|host** <*single destination address*>**} [dscp** <*dscp value*>**|precedence** <*precedence value*>**] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
IANA protocol number	Discards packets based on the protocol number assigned by the Internet Assigned Numbers Authority (IANA). The *IANA protocol number* is from 1 to 255.
ahp	Discards Authentication Header (AH) packets.
any	Depending on the position where this parameter is used it can mean the discarding of: • packets regardless of their source protocol, or • packets regardless of their source address, or • packets regardless of their destination address.
eigrp	Discards Enhanced Interior Gateway Routing Protocol (EIGRP) packets.
esp	Discards Encapsulating Security Payload (ESP) packets.
gre	Discards Generic Routing Encapsulation (GRE) packets.
icmp	Discards Internet Control Message Protocol (ICMP) packets.
igmp	Discards Internet Group Management Protocol (IGMP) packets.
ip	Discards Internet Protocol version 4 (IPv4) encapsulation packets.
nos	Discards KA9Q NOS compatible IP over IP tunneling packets.
ospf	Discards Open Shortest Path First (OSPF) packets.

Parameter	Function
`pcp`	Discards IP Payload Compression Protocol (PCP) packets.
`pim`	Discards Protocol Independent Multicast (PIM) packets.
`tcp`	Discards Transmission Control Protocol (TCP) packets.
`udp`	Discards User Datagram Protocol (UDP) packets.
source address	Discards packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
`host` *single source address*	Discards packets received from the specified single source IPv4 address.
destination address	Discards packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
`host` *single destination address*	Discards packets sent to the specified single destination IPv4 address.
`dscp` *dscp value*	Discards packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● `af11` - AF11 DSCP (001010) ● `af12` - AF12 DSCP (001100) ● `af13` - AF13 DSCP (001110) ● `af21` - AF21 DSCP (010010) ● `af22` - AF22 DSCP (010100) ● `af23` - AF23 DSCP (010110) ● `af31` - AF31 DSCP (011010) ● `af32` - AF32 DSCP (011100) ● `af33` - AF33 DSCP (011110) ● `af41` - AF41 DSCP (100010) ● `af42` - AF42 DSCP (100100) ● `af43` - AF43 DSCP (100110) ● `cs1` - CS1(precedence 1) DSCP (001000) ● `cs2` - CS2(precedence 2) DSCP (010000) ● `cs3` - CS3(precedence 3) DSCP (011000) ● `cs4` - CS4(precedence 4) DSCP (100000) ● `cs5` - CS5(precedence 5) DSCP (101000) ● `cs6` - CS6(precedence 6) DSCP (110000) ● `cs7` - CS7(precedence 7) DSCP (111000) ● `default` - Default DSCP (000000) ● `ef` - EF DSCP (101110)

Parameter	Function
precedence *precedence value*	Discards packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
fragments	Checks non-initial fragments.
log	Enables ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the discarding of OSPF packets received from the single source address 10.240.35.78 with any destination:

```
Switch(config-acl)# deny ospf host 10.240.35.78 any
```

Chapter 21: IP ACL Mode Commands

deny icmp

Enables or disables the discarding of Internet Control Message Protocol (ICMP) packets.

Syntax

[no] [<*ACL sequence number*>**] deny icmp {**<*source address*>**|any|host** <*single source address*>**} {**<*destination address*>**|any|host** <*single destination address*>**} [**<*ICMP type*>**|administratively-prohibited| alternate-address|conversion-error|dod-host-prohibited| dod-net-prohibited|dscp** <*dscp value*>**|echo|echo-reply| general-parameter-problem|host-isolated| host-precedence-unreachable|host-redirect|host-tos-redirect| host-tos-unreachable|host-unknown|host-unreachable| information-reply|information-request|mask-reply| mask-request|mobile-redirect|net-redirect|net-tos-redirect| net-tos-unreachable|net-unreachable|network-unknown| no-room-for-option|option-missing|packet-too-big| parameter-problem|port-unreachable|precedence** <*precedence value*>**| precedence-unreachable|protocol-unreachable| reassembly-timeout|redirect|router-advertisement| router-solicitation|source-quench|source-route-failed| time-exceeded|timestamp-reply|timestamp-request|traceroute| ttl-exceeded|unreachable] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
source address	Discards ICMP packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
any	Discards ICMP packets received or sent from or to any source or destination address.
host *single source address*	Discards ICMP packets received from the specified single source IPv4 address.
destination address	Discards ICMP packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Discards ICMP packets sent to the specified single destination IPv4 address.

Parameter	Function
ICMP type	Discards ICMP packets based on their type. The *ICMP type* is from 0 to 255.
`administratively-prohibited`	Discards ICMP administratively prohibited packets.
`alternate-address`	Discards ICMP alternate address packets.
`conversion-error`	Discards ICMP datagram conversion error packets.
`dod-host-prohibited`	Discards ICMP host prohibited packets.
`dod-net-prohibited`	Discards ICMP network prohibited packets.
`dscp` *dscp value*	Discards ICMP packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● `af11` - AF11 DSCP (001010) ● `af12` - AF12 DSCP (001100) ● `af13` - AF13 DSCP (001110) ● `af21` - AF21 DSCP (010010) ● `af22` - AF22 DSCP (010100) ● `af23` - AF23 DSCP (010110) ● `af31` - AF31 DSCP (011010) ● `af32` - AF32 DSCP (011100) ● `af33` - AF33 DSCP (011110) ● `af41` - AF41 DSCP (100010) ● `af42` - AF42 DSCP (100100) ● `af43` - AF43 DSCP (100110) ● `cs1` - CS1(precedence 1) DSCP (001000) ● `cs2` - CS2(precedence 2) DSCP (010000) ● `cs3` - CS3(precedence 3) DSCP (011000) ● `cs4` - CS4(precedence 4) DSCP (100000) ● `cs5` - CS5(precedence 5) DSCP (101000) ● `cs6` - CS6(precedence 6) DSCP (110000) ● `cs7` - CS7(precedence 7) DSCP (111000) ● `default` - Default DSCP (000000) ● `ef` - EF DSCP (101110)
`echo`	Discards ICMP echo packets.
`echo-reply`	Discards ICMP echo replies.
`general-parameter-problem`	Discards ICMP packets that have a problem.
`host-isolated`	Discards ICMP host isolated packets.
`host-precedence-unreachable`	Discards ICMP host unreachable for precedence packets.

Parameter	Function
host-redirect	Discards ICMP host redirect packets.
host-tos-redirect	Discards ICMP host redirects for Type of Services (ToS).
host-tos-unreachable	Discards ICMP host unreachable for ToS packets.
host-unknown	Discards ICMP host unknown packets.
host-unreachable	Discards ICMP host unreachable packets.
information-reply	Discards ICMP information replies.
information-request	Discards ICMP information requests.
mask-reply	Discards ICMP network mask replies.
mask-request	Discards ICMP network mask requests.
mobile-redirect	Discards ICMP mobile redirects.
net-redirect	Discards ICMP network redirects.
net-tos-redirect	Discards ICMP network redirects for ToS.
net-tos-unreachable	Discards ICMP network unreachable for ToS packets.
net-unreachable	Discards ICMP network unreachable packets.
network-unknown	Discards ICMP network unknown packets.
no-room-for-option	Discards ICMP packets where a parameter is required but there is no space available.
option-missing	Discards ICMP packets where a parameter is required but it is missing.
packet-too-big	Discards ICMP packets that are too large requiring fragmentation.
parameter-problem	Discards all ICMP packets with parameter problems.
port-unreachable	Discards ICMP port unreachable packets.

Parameter	Function
precedence *precedence value*	Discards ICMP packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
precedence-unreac hable	Discards ICMP precedence cutoff packets.
protocol-unreacha ble	Discards ICMP protocol unreachable packets.
reassembly-timeou t	Discards ICMP reassembly timeouts.
redirect	Discards all ICMP redirects.
router-advertisem ent	Discards ICMP router discovery advertisements.
router-solicitati on	Discards ICMP router discovery solicitations.
source-quench	Discards ICMP source quenches.
source-route-fail ed	Discards ICMP source route failed packets.
time-exceeded	Discards all ICMP time exceeded messages.
timestamp-reply	Discards ICMP timestamp replies.
timestamp-request	Discards ICMP timestamp requests.
traceroute	Discards ICMP trace route packets.
ttl-exceeded	Discards ICMP Time to Live (TTL) exceeded packets.
unreachable	Discards all ICMP unreachable packets.
fragments	Checks non-initial fragments.
log	Enables ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the discarding of ICMP packets received from the single source address 10.240.35.78 with any destination:

```
Switch(config-acl)# deny icmp host 10.240.35.78 any
```

deny tcp

Enables or disables the discarding of Transmission Control Protocol (TCP) packets.

Syntax

[no] [<*ACL sequence number*>**] deny tcp {**<*source address*>**|any|host** <*single source address*>**} [{eq|gt|lt|neq}** <*source port*>**|range** <*source port range*>**] {**<*destination address*>**|any|host** <*single destination address*>**} [{eq|gt|lt|neq}** <*destination port*>**|range** <*destination port range*>**] [ack] [established] [fin] [psh] [rst] [syn] [urg] [dscp** <*dscp value*>**| precedence** <*precedence value*>**] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
source address	Discards TCP packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
any	Discards TCP packets received or sent from or to any source or destination address.
eq	Discards TCP packets with source port number equal to the specified value.
gt	Discards TCP packets with source port number greater than the specified value.
lt	Discards TCP packets with source port number lower than the specified value.
neq	Discards TCP packets with source port number not equal to the specified value.
source port	The TCP source port number. It is from 0 to 65535.
destination port	The TCP destination port number. It is from 0 to 65535.
range	Discards TCP packets with port numbers included in the specified port range.
source port range	The TCP source port range. It is from 0 to 65535.
destination port range	The TCP destination port range. It is from 0 to 65535.
host *single source address*	Discards TCP packets received from the specified single source IPv4 address.

Parameter	Function
destination address	Discards TCP packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Discards TCP packets sent to the specified single destination IPv4 address.
ack	Discards TCP packets that have matching acknowledgment bits.
established	Discards TCP packets that belong to an established TCP connection.
fin	Discards TCP packets that have matching finish bits.
psh	Discards TCP packets that have matching push bits.
rst	Discards TCP packets that have matching reset bits.
syn	Discards TCP packets that have matching synchronize bits.
urg	Discards TCP packets that have matching urgent bits.
dscp *dscp value*	Discards TCP packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● af11 - AF11 DSCP (001010) ● af12 - AF12 DSCP (001100) ● af13 - AF13 DSCP (001110) ● af21 - AF21 DSCP (010010) ● af22 - AF22 DSCP (010100) ● af23 - AF23 DSCP (010110) ● af31 - AF31 DSCP (011010) ● af32 - AF32 DSCP (011100) ● af33 - AF33 DSCP (011110) ● af41 - AF41 DSCP (100010) ● af42 - AF42 DSCP (100100) ● af43 - AF43 DSCP (100110) ● cs1 - CS1(precedence 1) DSCP (001000) ● cs2 - CS2(precedence 2) DSCP (010000) ● cs3 - CS3(precedence 3) DSCP (011000) ● cs4 - CS4(precedence 4) DSCP (100000) ● cs5 - CS5(precedence 5) DSCP (101000) ● cs6 - CS6(precedence 6) DSCP (110000) ● cs7 - CS7(precedence 7) DSCP (111000) ● default - Default DSCP (000000) ● ef - EF DSCP (101110)

Parameter	Function
precedence *precedence value*	Discards TCP packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
log	Enables ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the discarding of TCP packets received from any source with any destination with source and destination ports 540 that match on their acknowledgment bits:

```
Switch(config-acl)# deny tcp any eq 540 any eq 540 ack
```

deny udp

Enables or disables the discarding of User Datagram Protocol (UDP) packets.

Syntax

[no] [<*ACL sequence number*>**] deny udp {**<*source address*>**|any|host** <*single source address*>**} [{eq|gt|lt|neq}** <*source port*>**|range** <*source port range*>**] {**<*destination address*>**|any|host** <*single destination address*>**} [{eq|gt|lt|neq}** <*destination port*>**|range** <*destination port range*>**] [ack] [established] [fin] [psh] [rst] [syn] [urg] [dscp** <*dscp value*>**| precedence** <*precedence value*>**] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
source address	Discards UDP packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
any	Discards UDP packets received or sent from or to any source or destination address.
eq	Discards UDP packets with source port number equal to the specified value.
gt	Discards UDP packets with source port number greater than the specified value.
lt	Discards UDP packets with source port number lower than the specified value.
neq	Discards UDP packets with source port number not equal to the specified value.
source port	The UDP source port number. It is from 0 to 65535.
destination port	The UDP destination port number. It is from 0 to 65535.
range	Discards UDP packets with port numbers included in the specified port range.
source port range	The UDP source port range. It is from 0 to 65535.
destination port range	The UDP destination port range. It is from 0 to 65535.
host *single source address*	Discards UDP packets received from the specified single source IPv4 address.

Parameter	Function
destination address	Discards UDP packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Discards UDP packets sent to the specified single destination IPv4 address.
dscp *dscp value*	Discards UDP packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● af11 - AF11 DSCP (001010) ● af12 - AF12 DSCP (001100) ● af13 - AF13 DSCP (001110) ● af21 - AF21 DSCP (010010) ● af22 - AF22 DSCP (010100) ● af23 - AF23 DSCP (010110) ● af31 - AF31 DSCP (011010) ● af32 - AF32 DSCP (011100) ● af33 - AF33 DSCP (011110) ● af41 - AF41 DSCP (100010) ● af42 - AF42 DSCP (100100) ● af43 - AF43 DSCP (100110) ● cs1 - CS1(precedence 1) DSCP (001000) ● cs2 - CS2(precedence 2) DSCP (010000) ● cs3 - CS3(precedence 3) DSCP (011000) ● cs4 - CS4(precedence 4) DSCP (100000) ● cs5 - CS5(precedence 5) DSCP (101000) ● cs6 - CS6(precedence 6) DSCP (110000) ● cs7 - CS7(precedence 7) DSCP (111000) ● default - Default DSCP (000000) ● ef - EF DSCP (101110)
precedence *precedence value*	Discards UDP packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
log	Enables ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the discarding of UDP packets received from any source with source ports between 240 and 500 that have any destination with destination ports greater than 1000:

```
Switch(config-acl)# deny udp any range 240-500 any gt 1000
```

permit

Enables or disables the forwarding of packets.

Syntax

[no] **[**<*ACL sequence number*>**]** **permit** **{**<*IANA protocol number*>**|ahp|any|**
eigrp|esp|gre|igmp|ip|nos|ospf|pcp|pim} **{**<*source address*>**|any|**
host <*single source address*>**}** **{**<*destination address*>**|any|host** <*single destination*
address>**}** **[dscp** <*dscp value*>**|precedence** <*precedence value*>**]** **[fragments]**
[log]

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
IANA protocol number	Forwards packets based on the protocol number assigned by the Internet Assigned Numbers Authority (IANA). The *IANA protocol number* is from 1 to 255.
ahp	Forwards Authentication Header (AH) packets.
any	Depending on the position where this parameter is used it can mean the forwarding of: ● packets regardless of their source protocol, or ● packets regardless of their source address, or ● packets regardless of their destination address.
eigrp	Forwards Enhanced Interior Gateway Routing Protocol (EIGRP) packets.
esp	Forwards Encapsulating Security Payload (ESP) packets.
gre	Forwards Generic Routing Encapsulation (GRE) packets.
igmp	Forwards Internet Group Management Protocol (IGMP) packets.
ip	Forwards Internet Protocol version 4 (IPv4) encapsulation packets.
nos	Forwards KA9Q NOS compatible IP over IP tunneling packets.
ospf	Forwards Open Shortest Path First (OSPF) packets.
pcp	Forwards IP Payload Compression Protocol (PCP) packets.

Parameter	Function
pim	Forwards Protocol Independent Multicast (PIM) packets.
source address	Forwards packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
host *single source address*	Forwards packets received from the specified single source IPv4 address.
destination address	Forwards packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Forwards packets sent to the specified single destination IPv4 address.
dscp *dscp value*	Forwards packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● af11 - AF11 DSCP (001010) ● af12 - AF12 DSCP (001100) ● af13 - AF13 DSCP (001110) ● af21 - AF21 DSCP (010010) ● af22 - AF22 DSCP (010100) ● af23 - AF23 DSCP (010110) ● af31 - AF31 DSCP (011010) ● af32 - AF32 DSCP (011100) ● af33 - AF33 DSCP (011110) ● af41 - AF41 DSCP (100010) ● af42 - AF42 DSCP (100100) ● af43 - AF43 DSCP (100110) ● cs1 - CS1(precedence 1) DSCP (001000) ● cs2 - CS2(precedence 2) DSCP (010000) ● cs3 - CS3(precedence 3) DSCP (011000) ● cs4 - CS4(precedence 4) DSCP (100000) ● cs5 - CS5(precedence 5) DSCP (101000) ● cs6 - CS6(precedence 6) DSCP (110000) ● cs7 - CS7(precedence 7) DSCP (111000) ● default - Default DSCP (000000) ● ef - EF DSCP (101110)

Parameter	Function
precedence *precedence value*	Forwards packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
fragments	Checks non-initial fragments.
log	Enables ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the forwarding of EIGRP packets received from any source with any destination:

```
Switch(config-acl)# deny eigrp any any
```

permit icmp

Enables or disables the forwarding of Internet Control Message Protocol (ICMP) packets.

Syntax

[no] [<*ACL sequence number*>**] permit icmp {**<*source address*>**|any|host** <*single source address*>**} {**<*destination address*>**|any|host** <*single destination address*>**} [**<*ICMP type*>**|administratively-prohibited| alternate-address|conversion-error|dod-host-prohibited| dod-net-prohibited|dscp** <*dscp value*>**|echo|echo-reply| general-parameter-problem|host-isolated| host-precedence-unreachable|host-redirect|host-tos-redirect| host-tos-unreachable|host-unknown|host-unreachable| information-reply|information-request|mask-reply| mask-request|mobile-redirect|net-redirect|net-tos-redirect| net-tos-unreachable|net-unreachable|network-unknown| no-room-for-option|option-missing|packet-too-big| parameter-problem|port-unreachable|precedence** <*precedence value*>**| precedence-unreachable|protocol-unreachable| reassembly-timeout|redirect|router-advertisement| router-solicitation|source-quench|source-route-failed| time-exceeded|timestamp-reply|timestamp-request|traceroute| ttl-exceeded|unreachable] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
source address	Forwards ICMP packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
any	Forwards ICMP packets received or sent from or to any source or destination address.
host *single source address*	Forwards ICMP packets received from the specified single source IPv4 address.
destination address	Forwards ICMP packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Forwards ICMP packets sent to the specified single destination IPv4 address.

Parameter	Function
ICMP type	Forwards ICMP packets based on their type. The *ICMP type* is from 0 to 255.
`administratively-prohibited`	Forwards ICMP administratively prohibited packets.
`alternate-address`	Forwards ICMP alternate address packets.
`conversion-error`	Forwards ICMP datagram conversion error packets.
`dod-host-prohibited`	Forwards ICMP host prohibited packets.
`dod-net-prohibited`	Forwards ICMP network prohibited packets.
`dscp` *dscp value*	Forwards ICMP packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● `af11` - AF11 DSCP (001010) ● `af12` - AF12 DSCP (001100) ● `af13` - AF13 DSCP (001110) ● `af21` - AF21 DSCP (010010) ● `af22` - AF22 DSCP (010100) ● `af23` - AF23 DSCP (010110) ● `af31` - AF31 DSCP (011010) ● `af32` - AF32 DSCP (011100) ● `af33` - AF33 DSCP (011110) ● `af41` - AF41 DSCP (100010) ● `af42` - AF42 DSCP (100100) ● `af43` - AF43 DSCP (100110) ● `cs1` - CS1(precedence 1) DSCP (001000) ● `cs2` - CS2(precedence 2) DSCP (010000) ● `cs3` - CS3(precedence 3) DSCP (011000) ● `cs4` - CS4(precedence 4) DSCP (100000) ● `cs5` - CS5(precedence 5) DSCP (101000) ● `cs6` - CS6(precedence 6) DSCP (110000) ● `cs7` - CS7(precedence 7) DSCP (111000) ● `default` - Default DSCP (000000) ● `ef` - EF DSCP (101110)
`echo`	Forwards ICMP echo packets.
`echo-reply`	Forwards ICMP echo replies.
`general-parameter-problem`	Forwards ICMP packets that have a problem.
`host-isolated`	Forwards ICMP host isolated packets.
`host-precedence-unreachable`	Forwards ICMP host unreachable for precedence packets.

Parameter	Function
`host-redirect`	Forwards ICMP host redirect packets.
`host-tos-redirect`	Forwards ICMP host redirects for Type of Services (ToS).
`host-tos-unreachable`	Forwards ICMP host unreachable for ToS packets.
`host-unknown`	Forwards ICMP host unknown packets.
`host-unreachable`	Forwards ICMP host unreachable packets.
`information-reply`	Forwards ICMP information replies.
`information-request`	Forwards ICMP information requests.
`mask-reply`	Forwards ICMP network mask replies.
`mask-request`	Forwards ICMP network mask requests.
`mobile-redirect`	Forwards ICMP mobile redirects.
`net-redirect`	Forwards ICMP network redirects.
`net-tos-redirect`	Forwards ICMP network redirects for ToS.
`net-tos-unreachable`	Forwards ICMP network unreachable for ToS packets.
`net-unreachable`	Forwards ICMP network unreachable packets.
`network-unknown`	Forwards ICMP network unknown packets.
`no-room-for-option`	Forwards ICMP packets where a parameter is required but there is no space available.
`option-missing`	Forwards ICMP packets where a parameter is required but it is missing.
`packet-too-big`	Forwards ICMP packets that are too large requiring fragmentation.
`parameter-problem`	Forwards all ICMP packets with parameter problems.
`port-unreachable`	Forwards ICMP port unreachable packets.

Parameter	Function
precedence *precedence value*	Forwards ICMP packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
precedence-unreachable	Forwards ICMP precedence cutoff packets.
protocol-unreachable	Forwards ICMP protocol unreachable packets.
reassembly-timeout	Forwards ICMP reassembly timeouts.
redirect	Forwards all ICMP redirects.
router-advertisement	Forwards ICMP router discovery advertisements.
router-solicitation	Forwards ICMP router discovery solicitations.
source-quench	Forwards ICMP source quenches.
source-route-failed	Forwards ICMP source route failed packets.
time-exceeded	Forwards all ICMP time exceeded messages.
timestamp-reply	Forwards ICMP timestamp replies.
timestamp-request	Forwards ICMP timestamp requests.
traceroute	Forwards ICMP trace route packets.
ttl-exceeded	Forwards ICMP Time to Live (TTL) exceeded packets.
unreachable	Forwards all ICMP unreachable packets.
fragments	Checks non-initial fragments.
log	Enables ACL logging to ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the forwarding of ICMP packets received from the single source address 10.240.35.78 with any destination:

```
Switch(config-acl)# permit icmp host 10.240.35.78 any
```

permit tcp

Enables or disables the forwarding of Transmission Control Protocol (TCP) packets.

Syntax

[no] [<*ACL sequence number*>**] permit tcp {**<*source address*>**|any|host** <*single source address*>**} [{eq|gt|lt|neq}** <*source port*>**|range** <*source port range*>**] {**<*destination address*>**|any|host** <*single destination address*>**} [{eq|gt|lt|neq}** <*destination port*>**|range** <*destination port range*>**] [ack] [established] [fin] [psh] [rst] [syn] [urg] [dscp** <*dscp value*>**| precedence** <*precedence value*>**] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
source address	Forwards TCP packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
any	Forwards TCP packets received or sent from or to any source or destination address.
eq	Forwards TCP packets with source port number equal to the specified value.
gt	Forwards TCP packets with source port number greater than the specified value.
lt	Forwards TCP packets with source port number lower than the specified value.
neq	Forwards TCP packets with source port number not equal to the specified value.
source port	The TCP source port number. It is from 0 to 65535.
destination port	The TCP destination port number. It is from 0 to 65535.
range	Forwards TCP packets with port numbers included in the specified port range.
source port range	The TCP source port range. It is from 0 to 65535.
destination port range	The TCP destination port range. It is from 0 to 65535.
host *single source address*	Forwards TCP packets received from the specified single source IPv4 address.

Parameter	Function
destination address	Forwards TCP packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Forwards TCP packets sent to the specified single destination IPv4 address.
ack	Forwards TCP packets that have matching acknowledgment bits.
established	Forwards TCP packets that belong to an established TCP connection.
fin	Forwards TCP packets that have matching finish bits.
psh	Forwards TCP packets that have matching push bits.
rst	Forwards TCP packets that have matching reset bits.
syn	Forwards TCP packets that have matching synchronize bits.
urg	Forwards TCP packets that have matching urgent bits.
dscp *dscp value*	Forwards TCP packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● af11 - AF11 DSCP (001010) ● af12 - AF12 DSCP (001100) ● af13 - AF13 DSCP (001110) ● af21 - AF21 DSCP (010010) ● af22 - AF22 DSCP (010100) ● af23 - AF23 DSCP (010110) ● af31 - AF31 DSCP (011010) ● af32 - AF32 DSCP (011100) ● af33 - AF33 DSCP (011110) ● af41 - AF41 DSCP (100010) ● af42 - AF42 DSCP (100100) ● af43 - AF43 DSCP (100110) ● cs1 - CS1(precedence 1) DSCP (001000) ● cs2 - CS2(precedence 2) DSCP (010000) ● cs3 - CS3(precedence 3) DSCP (011000) ● cs4 - CS4(precedence 4) DSCP (100000) ● cs5 - CS5(precedence 5) DSCP (101000) ● cs6 - CS6(precedence 6) DSCP (110000) ● cs7 - CS7(precedence 7) DSCP (111000) ● default - Default DSCP (000000) ● ef - EF DSCP (101110)

Parameter	Function
precedence *precedence value*	Forwards TCP packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
log	Enables ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the forwarding of TCP packets received from any source with any destination with source and destination ports 540 that match on their acknowledgment bits:

```
Switch(config-acl)# permit tcp any eq 540 any eq 540 ack
```

permit udp

Enables or disables the forwarding of User Datagram Protocol (UDP) packets.

Syntax

[no] [<*ACL sequence number*>**] permit udp {**<*source address*>**|any|host** <*single source address*>**} [{eq|gt|lt|neq}** <*source port*>**|range** <*source port range*>**] {**<*destination address*>**|any|host** <*single destination address*>**} [{eq|gt|lt|neq}** <*destination port*>**|range** <*destination port range*>**] [ack] [established] [fin] [psh] [rst] [syn] [urg] [dscp** <*dscp value*>**| precedence** <*precedence value*>**] [fragments] [log]**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
source address	Forwards UDP packets received from the specified source address. It can be written as: ● *source IPv4 address source wildcard mask* ● *source IPv4 address/network mask length*
any	Forwards UDP packets received or sent from or to any source or destination address.
eq	Forwards UDP packets with source port number equal to the specified value.
gt	Forwards UDP packets with source port number greater than the specified value.
lt	Forwards UDP packets with source port number lower than the specified value.
neq	Forwards UDP packets with source port number not equal to the specified value.
source port	The UDP source port number. It is from 0 to 65535.
destination port	The UDP destination port number. It is from 0 to 65535.
range	Forwards UDP packets with port numbers included in the specified port range.
source port range	The UDP source port range. It is from 0 to 65535.
destination port range	The UDP destination port range. It is from 0 to 65535.
host *single source address*	Forwards UDP packets received from the specified single source IPv4 address.

Parameter	Function
destination address	Forwards UDP packets sent to the specified destination address. It can be written as: ● *destination IPv4 address destination wildcard mask* ● *destination IPv4 address/network mask length*
host *single destination address*	Forwards UDP packets sent to the specified single destination IPv4 address.
dscp *dscp value*	Forwards UDP packets based on their DiffServ Code Point (DSCP) value. The *DSCP value* is from 0 to 63 or one of the following: ● af11 - AF11 DSCP (001010) ● af12 - AF12 DSCP (001100) ● af13 - AF13 DSCP (001110) ● af21 - AF21 DSCP (010010) ● af22 - AF22 DSCP (010100) ● af23 - AF23 DSCP (010110) ● af31 - AF31 DSCP (011010) ● af32 - AF32 DSCP (011100) ● af33 - AF33 DSCP (011110) ● af41 - AF41 DSCP (100010) ● af42 - AF42 DSCP (100100) ● af43 - AF43 DSCP (100110) ● cs1 - CS1(precedence 1) DSCP (001000) ● cs2 - CS2(precedence 2) DSCP (010000) ● cs3 - CS3(precedence 3) DSCP (011000) ● cs4 - CS4(precedence 4) DSCP (100000) ● cs5 - CS5(precedence 5) DSCP (101000) ● cs6 - CS6(precedence 6) DSCP (110000) ● cs7 - CS7(precedence 7) DSCP (111000) ● default - Default DSCP (000000) ● ef - EF DSCP (101110)
precedence *precedence value*	Forwards UDP packets based on their precedence value. The *precedence value* is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
log	Enable ACL logging per ACE.

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **log** option.

Example

The following command enables the forwarding of UDP packets received from any source with source ports between 240 and 500 that have any destination with destination ports greater than 1000:

```
Switch(config-acl)# permit udp any range 240-500 any gt 1000
```

remark

Adds comment texts to ACLs.

Syntax

[no] **[**<*ACL sequence number*>**]** **remark** <*remark*>

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
remark	The comment text; a string up to 100 characters long.

Using **no** before the command removes a specific text comment.

Modes

IP ACL Configuration Mode

ARP ACL Configuration Mode

MAC ACL Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enters a comment to a specific ACL:

```
Switch(config-acl)# remark text
```

Restrictions

If multiple remarks contain the same text, only the first occurrence of the remark can be removed. To remove a specific duplicate remark, remove it by sequence number.

statistics per-entry

Configures the switch to maintain global statistics for packets that match the rules in the ACL.

Syntax

[no] statistics per-entry

Modes

IP ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the collection of statistics for each ACL entry:

```
Switch(config-acl)# statistics per-entry
```

Chapter 22. ARP ACL Mode Commands

This chapter describes the commands available in Address Resolution Protocol (ARP) Access Control List (ACL) Configuration Mode.

arp access-list

Creates an Address Resolution Protocol (ARP) Access Control List (ACL). After creating an ARP ACL, enters ARP ACL Configuration mode.

Syntax

[no] arp access-list *<ACL name>*

where:

Parameter	Function
ACL name	The name of ACL.

Using **no** before the command deletes the ARP ACL.

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates an ARP ACL named acl-03:

```
Switch(config)# arp access-list acl-03
```

deny

Enables or disables the discarding of Address Resolution Protocol (ARP) packets.

Syntax

[no] [<*ACL sequence number*>**] deny [request|response] ip {**<*source IPv4 address*>**|any|host** <*single source address*> **{mac {**<*source MAC address*> <*MAC wildcard*>**|any|host** <*source MAC address*>**}}}**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
`request`	Discards only ARP request packets.
`response`	Discards only ARP response packets.
source address	The IPv4 address of the ARP source. The source address can be specified in one of two formats: ● <*IPv4 address*> <*IPv4 wildcard mask*> ● <*IPv4 address/network mask length*>
`any`	Discards ARP packets from any source address.
`host`	Discards ARP packets from the specified source.
single source address	The IPv4 address of the ARP source. The single source address is specified in <*IPv4 address*>.
`mac`	Discards ARP packets from source MAC address.
source MAC address	The MAC address of the ARP source. It can be specified in one of the following formats: ● X.X.X ● XX-XX-XX-XX-XX-XX ● XX:XX:XX:XX:XX:XX ● XXXX.XXXX.XXXX
source MAC wildcard	The wildcard for the source MAC address.

Modes

ARP ACL Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command discards ARP packets from any source with source MAC address a3:46:78:be:01:98 and MAC wildcard 0000.0000.ffff:

```
Switch(config-arp-acl)# deny ip any mac a3:46:78:be:01:98 0000.0000.ffff
```

permit

Enables or disables the forwarding of Address Resolution Protocol (ARP) packets.

Syntax

[no] [<*ACL sequence number*>**] permit [request|response] ip**
{<*source address*>**|any|host** <*single source address*> **{mac {**<*source MAC address*>
<*MAC wildcard*>**|any|host** <*source MAC address*>**}}}**

where:

Parameter	Function
ACL sequence number	The sequence number of the IPv4 Access Control List (ACL). The *ACL sequence number* is from 1 to 2147483645.
request	Forwards only ARP request packets.
response	Forwards only ARP response packets.
source address	The IPv4 address of the ARP source. The source address can be specified in one of two formats: ● *<IPv4 address>* *<IPv4 wildcard mask>* ● *<IPv4 address/network mask length>*
any	Forwards ARP packets from any source IPv4 address.
host	Forwards ARP packets from the specified source.
single source address	The IPv4 address of the ARP source. The single source address is specified in *<IPv4 address>*.
mac	Forwards ARP packets from source MAC address.
source MAC address	The MAC address of the ARP source. It can be specified in one of the following formats: ● X.X.X ● XX-XX-XX-XX-XX-XX ● XX:XX:XX:XX:XX:XX ● XXXX.XXXX.XXXX
source MAC wildcard	The wildcard for the source MAC address.

Modes

ARP ACL Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command forwards ARP packets from any source with source MAC address `a3:46:78:be:01:98` and MAC wildcard `0000.0000.ffff`:

```
Switch(config-arp-acl)# permit ip any mac a3:46:78:be:01:98
0000.0000.ffff
```

statistics per-entry

Configures the switch to collect global statistics for packets that match the rules in the ACL.

Syntax

```
[no] statistics per-entry
```

Modes

ARP ACL Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the collection of statistics for each ARP entry:

```
Switch(config-arp-acl)# statistics per-entry
```

Chapter 23. MAC ACL Mode Commands

This chapter describes the commands you need to get into and use MAC ACL Mode.

mac access-list

Creates a MAC access control list and enters MAC ACL Configuration Mode.

Syntax

[**no**] **mac access-list** *<MAC ACL>*

where:

Parameter	Definition
MAC ACL	The name of the MAC access control list; a string up to 64 characters long.

Using **no** before the command removes the MAC ACL.

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command creates MAC ACL MyACL:

```
Switch(config)# mac access-list MyACL
Switch(config-mac-acl)#
```

Related Commands

Command	Description
configure	Configures terminal parameters.

deny

Specifies which packets to reject.

Syntax

[*<sequence number>*] **deny** {*<source MAC>* [*<source wildcard>*]}|
  any|**{host** *<source MAC>***}} {***<destination MAC>* [*<destination wildcard>*]}|**any**|
  {host *<destination MAC>***}} [***<protocol>***] [cos** *<cos>*] [**vlan** *<vlan>***]**

where:

Parameter	Definition
sequence number	(Optional) ACL sequence number; an integer from 1-2147483645.
source MAC	The source MAC address in one of the following formats: • *XXXX.XXXX.XXXX.* • *XX:XX:XX:XX:XX:XX* • *XX-XX-XX-XX-XX-XX*
source wildcard	(Optional) Source wildcard MAC address in one of the following formats: • *XXXX.XXXX.XXXX.* • *XX:XX:XX:XX:XX:XX* • *XX-XX-XX-XX-XX-XX*
any	Any source or destination
host	A single source or destination host
destination MAC	The destination MAC address in one of the following formats: • *XXXX.XXXX.XXXX.* • *XX:XX:XX:XX:XX:XX* • *XX-XX-XX-XX-XX-XX*
destination wildcard	(Optional) Destination wildcard MAC address in one of the following formats: • *XXXX.XXXX.XXXX.* • *XX:XX:XX:XX:XX:XX* • *XX-XX-XX-XX-XX-XX*

Parameter	Definition
protocol	(Optional) The protocol; one of the following: ● *protocol*: any Ethertype value (text) ● **aarp**: AARP Ethertype - 0x80f3 ● **appletalk**: Appletalk Ethertype - 0x80b ● **decnet-iv**: DECNET-IV Ethertype - 0x6003 ● **diagnostic**: Diagnostic Ethertype - 0x6005 ● **etype-6000**: Etype-6000 Ethertype - 0x6000 ● **etype-8042**: Etype-8042 Ethertype - 0x8042 ● **ip**: IP Ethertype - 0x0800 ● **lat**: LAT Ethertype - 0x6004 ● **lavc-sca**: LAVC-SCA Ethertype - 0x6007 ● **mop-console**: MOP-Console Ethertype - 0x6002 ● **mop-dump**: MOP-Dump Ethertype - 0x6001 ● **vines-echo**: Vines-Echo Ethertype - 0x0baf
cos *cos*	(Optional) The Class of Service number; an integer from 0-7.
vlan *vlan*	(Optional) The VLAN number; an integer from 1-4093.

Using **no** before the command negates it.

Modes

MAC ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command was updated.

Example

The following command denies packets from ACL sequence 2 with source
aaaa.bbbb.cccc with wildcard dddd.eeee.ffff and destination host
1111.2222.3333 using IP protocol:

```
Switch(config-mac-acl)# 2 deny aaaa.bbbb.cccc dddd.eeee.ffff host
1111.2222.3333 ip
```

The following command denies packets from any source and destination host
aaaa.bbbb.cccc with Class of Service 2:

```
Switch(config-mac-acl)# deny any host aaaa.bbbb.cccc cos 2
```

Related Commands

Command	Description
configure	Configures terminal parameters.
mac access-list	Creates a MAC access control list.
permit	Specifies which packets to allow through..

permit

Specifies which packets to allow through.

Syntax

[*<sequence number>*] **permit** {*<source MAC>* [*<source wildcard>*]} |
   any | {**host** *<source MAC>*}} {*<destination MAC>* [*<destination wildcard>*]} | **any** |
   {**host** *<destination MAC>*}} **[***<protocol>***]** [**cos** *<cos>*] [**vlan** *<vlan>*]

where:

Parameter	Definition
sequence number	(Optional) ACL sequence number; an integer from 1-2147483645.
source MAC	The source MAC address in one of the following formats: ● *XXXX.XXXX.XXXX.* ● *XX:XX:XX:XX:XX:XX* ● *XX-XX-XX-XX-XX-XX*
source wildcard	(Optional) Source wildcard MAC address in one of the following formats: ● *XXXX.XXXX.XXXX.* ● *XX:XX:XX:XX:XX:XX* ● *XX-XX-XX-XX-XX-XX*
any	Any source or destination
host	A single source or destination host
destination MAC	The destination MAC address in one of the following formats: ● *XXXX.XXXX.XXXX.* ● *XX:XX:XX:XX:XX:XX* ● *XX-XX-XX-XX-XX-XX*
destination wildcard	(Optional) Destination wildcard MAC address in one of the following formats: ● *XXXX.XXXX.XXXX.* ● *XX:XX:XX:XX:XX:XX* ● *XX-XX-XX-XX-XX-XX*

Parameter	Definition
protocol	(Optional) The protocol; one of the following: ● *protocol*: any Ethertype value (text) ● **aarp**: AARP Ethertype - 0x80f3 ● **appletalk**: Appletalk Ethertype - 0x80b ● **decnet-iv**: DECNET-IV Ethertype - 0x6003 ● **diagnostic**: Diagnostic Ethertype - 0x6005 ● **etype-6000**: Etype-6000 Ethertype - 0x6000 ● **etype-8042**: Etype-8042 Ethertype - 0x8042 ● **ip**: IP Ethertype - 0x0800 ● **lat**: LAT Ethertype - 0x6004 ● **lavc-sca**: LAVC-SCA Ethertype - 0x6007 ● **mop-console**: MOP-Console Ethertype - 0x6002 ● **mop-dump**: MOP-Dump Ethertype - 0x6001 ● **vines-echo**: Vines-Echo Ethertype - 0x0baf
cos *cos*	(Optional) The Class of Service number; an integer from 0-7.
vlan *vlan*	(Optional) The VLAN number; an integer from 1-4093.

Using **no** before the command negates it.

Modes

MAC ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.4	Documentation of the command was updated.

Example

The following command accepts packets from ACL sequence 2 with source
aaaa.bbbb.cccc with wildcard dddd.eeee.ffff and destination host
1111.2222.3333 using IP protocol:

```
Switch(config-mac-acl)# 2 permit aaaa.bbbb.cccc dddd.eeee.ffff host
1111.2222.3333 ip
```

The following command permits packets from any source and destination host
aaaa.bbbb.cccc with Class of Service 2:

```
Switch(config-mac-acl)# deny any host aaaa.bbbb.cccc cos 2
```

Related Commands

Command	Description
configure	Configures terminal parameters.
mac access-list	Creates a MAC access control list.
deny	Specifies which packets to reject.

statistics

Configures the switch to collect global statistics for packets that match the rules in the ACL.

Syntax

statistics per-entry

Modes

MAC ACL Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command collects statistics from each ACL entry:

```
Switch(config-mac-acl)# statistics per-entry
```

Related Commands

Command	Description
configure	Configures terminal parameters.
mac access-list	Creates a MAC access control list.

Chapter 24. MST Mode Commands

This chapter describes how to enter Multiple Spanning Tree (MST) Configuration Mode and the commands in this mode.

spanning-tree mst configuration

Enters MST configuration mode.

Syntax

[no] spanning-tree mst configuration

Using **no** before the command restores the default MST configuration.

Modes

Global Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to enable MST configuration mode:

```
Switch(config)# spanning-tree mst configuration
Switch(config-mst)#
```

abort

Exits MST configuration mode and aborts changes.

Syntax

abort

Modes

MST Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following exits MST Configuration Mode without saving changes:

```
Switch(config-mst)# abort
Switch(config)
```

exits

Exits MST configuration mode to previous mode and saves changes.

Syntax

```
exit
```

Modes

MST Configuration Mode

History

Release	Modification
10.4	The command was introduced.

Example

The following exits MST Configuration Mode and saves changes:

```
Switch(config-mst)# exit
Switch(config)
```

instance

Maps the specified VLANs to the Spanning Tree instance. If a VLAN does not exist, it is not created automatically.

Syntax

[no] instance *<number>* **vlan** *<vlan number>*

where:

Parameter	Description
number	Instance number; an integer from 0-64. Instance 0 refers to CIST.
vlan number	VLAN number; an integer from 1-4094.

Using **no** before the command removes the specified VLANs or all VLANs from the Spanning Tree instance and adds them to CIST.

Modes

MST Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command maps instance 5 to VLAN 4094:

```
Switch(config-mst)# instance 5 vlan 4094
```

name

Configures a name for the MSTP region. All devices within an MSTP region must have the same region name.

Syntax

[no] name *<region name>*

where:

Parameter	Description
region name	MSTP region name (up to 32 alphanumeric characters).

Using **no** before the command removes a specified region name.

Modes

MST Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a region name:

```
Switch(config-mst)# name test
```

revision

Configures a revision number for the MSTP region. The revision is used as a numerical identifier for the region. All devices within an MSTP region must have the same revision number.

Syntax

[no] revision *<number>*

where:

Parameter	Description
<number>	Revision number for the MST region (a number from 0 to 65535). The default value is 0.

Using **no** before the command restores the default setting.

Modes

MST Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a revision number:

```
Switch(config-mst)# revision 200
```

Chapter 25. PKI Mode Commands

This chapter describes how to enter Public Key Infrastructure (PKI) Configuration Mode and the commands available in this mode.

pki

Creates a Public Key Infrastructure (PKI) profile. After command execution, you enter PKI Configuration command mode.

Syntax

pki *<PKI profile name>*

where:

Parameter	Description
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.

The following command deletes the specified PKI profile:

no pki *<PKI profile name>*

Modes

Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command creates a PKI profile called pkiProfile1:

```
Switch(config)# pki pkiProfile1
Switch(config-pki)#
```

ca import

Copies a new Certificate Authority (CA) from the specified SFTP URL.

Syntax

ca import *<SFTP URL>* **[vrf {default|management}]**

where:

Parameter	Description
SFTP URL	The location of the CA on the remote SFTP server. The *SFTP URL* format is: *sftp://username@server address/filepath*
vrf default	Copies the new CA using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies the new CA using the management VRF instance.

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command copies a new CA from a remote SFTP server:

```
Switch(config-pki)# ca import sftp://Admin1@CAserver1:caDir/importCA1
```

ca delete

Deletes a Certificate Authority (CA) from the switch.

Syntax

ca delete *<subject>*

where:

Parameter	Description
subject	Deletes the CA identified by subject name. The *subject* can contain the country name (for example, C=US), the state or province name (for example, ST=CA), and other fields present in the CA.

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command deletes a CA from the switch:

```
Switch(config-pki)# ca delete C=US, ST=Maryland, L=Baltimore, O=Test CA,
Limited, OU=Server Research Department, CA/emailAddress=test@example.com,
CN=Test
```

csr generate

Creates a new Certificate Signing Request (CSR). During the CSR generation process, you are prompted to define the information of each field of the CSR. After the CSR is generated, it needs to be exported to a Certificate Authority (CA) to be signed and then imported back to the switch.

Syntax

csr generate

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command generates a new CSR:

```
Switch(config-pki)# csr generate

Country Name (2 letter code) [US]:
State or Province Name (full name) [California]:
Locality Name (eg, city) [Santa Clara]:
Organization Name (eg, company) [Lenovo Networking Operating System]:
Organizational Unit Name (eg, section) [Network Engineering]:
Common Name (eg, FQDN or YOUR name) []:
Email (eg, email address) []:
Confirm generate csr? (y/n)
```

csr export

Copies the newly generated CSR to a Certificate Authority (CA) to be signed with its private key.

Syntax

csr export *<SFTP URL>* **[vrf {default|management}]**

where:

Parameter	Description
SFTP URL	The location of the CA on the remote SFTP server. The *SFTP URL* format is: *sftp://username@server address/filepath*
vrf default	Copies the new CSR using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies the new CSR using the management VRF instance.

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command copies the newly generated CSR to a remote CA:

```
Switch(config-pki)# csr export sftp://Admin1@CAserver1:csrDir/export
```

csr import

Copies the signed CSR from the remote Certificate Authority (CA) to the switch.

Syntax

`csr import` *<SFTP URL>* `[vrf {default|management}]`

where:

Parameter	Description
SFTP URL	The location of the signed CSR on the remote SFTP server. The *SFTP URL* format is: *sftp://username@server address/filepath*
`vrf default`	Copies the signed CSR using the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Copies the signed CSR using the management VRF instance.

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command copies the signed CSR from a remote CA:

```
Switch(config-pki)# csr import sftp://Admin1@CAserver1:csrDir/import
```

host-cert generate

Creates a new host certificate to connect to the SSL to be used during the key exchange. During the host certificate generation process, you are prompted to define the information of each field of the certificate.

Syntax

host-cert generate

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command generates a new host certificate:

```
Switch(config-pki)# host-cert generate

Country Name (2 letter code) [US]:
State or Province Name (full name) [California]:
Locality Name (eg, city) [Santa Clara]:
Organization Name (eg, company) [Lenovo Networking Operating System]:
Organizational Unit Name (eg, section) [Network Engineering]:
Common Name (eg, FQDN or YOUR name) []:
Email (eg, email address) []:
Confirm generate certificate? (y/n) [n]
```

host-cert certificate import

Copies the host certificate from a remote Certificate Authority (CA) to the switch.

Note: After both the host certificate and the private key are copied to the switch, a validation process will be performed on the pair (host certificate and private key).

Syntax

host-cert certificate import *<SFTP URL>* **[vrf {default|**
|management}]

where:

Parameter	Description
SFTP URL	The location of the host certificate on the remote SFTP server. The *SFTP URL* format is: *sftp://username@server address/filepath*
vrf default	Copies the host certificate using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies the host certificate using the management VRF instance.

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command copies a host certificate from a remote CA:

```
Switch(config-pki)# host-cert certificate import
sftp://Admin1@CAserver1:host-certDir/import
```

host-cert private-key import

Copies the private key from a remote Certificate Authority (CA) to the switch.

Note: After both the host certificate and the private key are copied to the switch, a validation process will be performed on the pair (host certificate and private key).

Syntax

host-cert private-key import *<SFTP URL>* **[vrf {default|**
|management}]

where:

Parameter	Description
SFTP URL	The location of the private key on the remote SFTP server. The *SFTP URL* format is: *sftp://username@server address/filepath*
vrf default	Copies the private key using the default Virtual Routing and Forwarding (VRF) instance.
vrf management	Copies the private key using the management VRF instance.

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command copies a private key from a remote CA:

```
Switch(config-pki)# host-cert private-key import
sftp://Admin1@CAserver1:privateKeyDir/import
```

host-cert delete

Deletes the host certificate. This will also delete the private key associated with the host certificate.

Syntax

host-cert delete

Modes

PKI Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command deletes the host certificate and private key pair:

```
Switch(config-pki)# host-cert delete
```

Chapter 26. Policy Map Mode Commands

This chapter describes how to enter Policy Map Configuration Mode and the commands in this mode.

policy-map

Enters Policy-Map Configuration Mode or creates a policy map that can be attached to one or more interfaces to specify a service policy.

Syntax

[no] policy-map *<name>*

where:

Parameter	Description
name	Policy map name.

Using **no** before the command removes a specified policy map.

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following configures a policy map named test:

```
Switch(config)# policy-map test
Switch(config-pmap-qos)#
```

class

Sets class map properties.

Syntax

```
class {<name>|class-default|type qos {<name>|class-default}}
{show|end|exit|help|no|police|write|where}
```

where:

Parameter	Description
name	Sets the class map name.
class-default	Sets the default class map name.
type qos *name*	Sets the class map type.
show	Displays system information.
end	Exits the current command mode and enters Privileged EXEC Mode.
exit	Leaves the current command mode and go down to the previous command mode.
	If in User EXEC Mode, logs off the switch.
help	Gives a brief description of the interactive help system.
no	Negates a command or set its defaults
police	Specifies a policer configuration
write	Saves running configuration.
where	Shows which ISCLI mode you are in.

Modes

Policy-Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to attach a class map to a policy map:

```
Switch(config-pmap-qos)# class test
Switch(config-pmap-c-qos)#
```

random-detect

Enables Weighted Random Early Detection (WRED). WRED discards packets based on the CoS queues.

Syntax

random-detect [minimum-threshold] {<*min-threshold*>**[**<*unit*>**]|percent** <*min-percent*>**} [maximum-threshold] {**<*max-threshold*>**[**<*unit*>**]||percent** <*max-percent*>**} {drop-probability** <*0-100*>**} [ecn]**

where:

Parameter	Description
minimum-threshold	Sets the falling threshold.
min-threshold	The falling threshold value.
maximum-threshold	Sets the rising threshold.
max-threshold	The rising threshold value.
unit	The unit of the threshold. One of: ● bytes: configures the threshold in bytes ● kbytes: configures the threshold in kilobytes ● mbytes: configures the threshold in megabytes ● ms: configures the threshold in milliseconds ● packets: configures the threshold in number of packets ● us: configures the threshold in microseconds
percent *min-percent max-percent*	WRED minimum and maximum values, in percentage.
drop-probability *<0-100>*	The drop probability rate. The default value is 100.
ecn	Enables Explicit Congestion Notification (ECN) for the queue.

Modes

Policy-Map Configuration Mode

History

Release	Modification
10.1	The command was introduced.
10.7	Added the **ecn** option.

Example

The following shows how to configure WRED:

```
Switch(config-pmap-c-que)# random-detect 3 minimum-threshold percent 50
maximum-threshold percent 100 drop-probability 100 ecn
```

Restrictions

Explicit Congestion Notification (ECN) is supported on the following switches:

● ThinkSystem NE10032 RackSwitch

● ThinkSystem NE2572 RackSwitch

set

Applies class map policies.

Syntax

[no] set {cos *\<CoS value\>***|dscp** *\<DSCP value\>***|precedence** *\<precedence value\>***|qos-group** *\<QoS group value\>***}**

where:

Parameter	Description
cos *CoS value*	Defines the specified Class of Service (CoS) as the classification criterion. The *CoS value* is from 0 to 7 and it can be specified as a range.
dscp *DSCP value*	Defines the specified DiffServ Code Point (DSCP) as the classification criterion. The *DSCP value* is from 0 to 63 or one of the following: ● af11 - AF11 DSCP (001010) ● af12 - AF12 DSCP (001100) ● af13 - AF13 DSCP (001110) ● af21 - AF21 DSCP (010010) ● af22 - AF22 DSCP (010100) ● af23 - AF23 DSCP (010110) ● af31 - AF31 DSCP (011010) ● af32 - AF32 DSCP (011100) ● af33 - AF33 DSCP (011110) ● af41 - AF41 DSCP (100010) ● af42 - AF42 DSCP (100100) ● af43 - AF43 DSCP (100110) ● cs1 - CS1(precedence 1) DSCP (001000) ● cs2 - CS2(precedence 2) DSCP (010000) ● cs3 - CS3(precedence 3) DSCP (011000) ● cs4 - CS4(precedence 4) DSCP (100000) ● cs5 - CS5(precedence 5) DSCP (101000) ● cs6 - CS6(precedence 6) DSCP (110000) ● cs7 - CS7(precedence 7) DSCP (111000) ● default - Default DSCP (000000) ● ef - EF DSCP (101110)

Parameter	Description
precedence *precedence value*	Defines the precedence as the classification criterion. The precedence value is from 0 to 7 or it can be one of the following: ● routine - Routine precedence (0) ● priority - Priority precedence (1) ● immediate - Immediate precedence (2) ● flash - Flash precedence (3) ● flash-override - Flash override precedence (4) ● critical - Critical precedence (5) ● internet - Internetwork control precedence (6) ● network - Network control precedence (7)
qos-group *QoS group value*	Defines the specified Quality of Service (QoS) group as the classification criterion. The *QoS group value* is from 0 to 7 and it can be specified as a range.

Modes

Policy-Map Class Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to define a precedence value:

```
Switch(config-pmap-c-qos)# set precedence 2
```

Chapter 27. VLAN Mode Commands

These commands enter you into an advanced configuration mode for configuring the VLAN attributes, change the status of each VLAN, change the port membership of each VLAN, and delete VLANs.

vlan

Creates a VLAN and enters into the VLAN configuration mode.

Syntax

[**no**] **vlan** *<vlan list>*

where:

Parameter	Description
<vlan list>	Individual VLAN ID or range(s) of VLANs.

Using **no** before the command deletes the VLAN or range of VLANs.

Modes

Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to create lists of VLANs:

```
Switch(config)# vlan 1-5,10
```

```
Switch(config)# vlan 2-5,7-19
```

Restrictions

- If the specified VLAN(s) doesn't exist, it will be created.

- By default, VLAN 1 is the only VLAN configured on the switch. All ports are members of VLAN 1 by default. Up to 4093 VLANs can be configured on the switch.

- VLANs can be assigned any number between 1 and 4093. By default, VLANs 4000-4094 are reserved for switch management, but the range of reserved VLANs is configurable.

- In RPVST+ mode, a maximum of 500 VLANs is allowed.

flood

Enables or disables the switch to flood unregistered IP multicast traffic to all ports. The default setting is enabled.

Syntax

[no] flood [ipv4|ipv6]

where:

Parameter	Description
ipv4	IPv4 packets.
ipv6	IPv6 packets.

Using **no** before the command turns off the feature.

Modes

VLAN Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables flood management:

```
Switch(config-vlan)# flood ipv4
```

ip igmp snooping

Enables or disables Internet Group Management Protocol (IGMP) snooping on the current VLAN.

By default, IGMP Snooping is enabled.

Syntax

[no] ip igmp snooping

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IGMP Snooping on the current VLAN:

```
Switch(config-vlan)# ip igmp snooping
```

ip igmp snooping fast-leave

Enables or disables Internet Group Management Protocol (IGMP) snooping fast-leave processing on the current VLAN.

Syntax

[no] ip igmp snooping fast-leave

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IGMP Snooping fast-leave:

```
Switch(config-vlan)# ip igmp snooping fast-leave
```

ip igmp snooping last-member-query-interval

When a multicast host leaves an Internet Group Management Protocol (IGMP) group, the host sends an IGMP leave message. To check if this host is the last to leave the group, an IGMP query is sent out as soon as the leave message is received and a timer (last-member-query-interval) is started.

If fast-leave processing is disabled, the switch waits until the timer expires and then removes the switch port from the group. If fast-leave processing is enabled, the timer is ignored and the switch immediately removes the switch port from the IGMP group.

This command configures the last-member-query-interval.

Use the **no** form of this command to reset the timer to its default value.

The default last-member-query-interval value is 1 second.

Syntax

[no] ip igmp snooping last-member-query-interval *<time interval>*

where:

Parameter	Function
time interval	The time, in seconds, a switch waits until it removes an IGMP group from a switch port if no reports are received. The *time interval* is from 1 to 25.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures a last-member-query-interval of 3 seconds:

```
Switch(config-vlan)# ip igmp snooping last-member-query-interval 3
```

ip igmp snooping mrouter interface

Adds or removes a layer 2 interface as a static multicast router port.

Syntax

[no] ip igmp snooping mrouter interface {ethernet *<chassis number>/<port number>*|**port-channel** *<LAG number>*}

where:

Parameter	Function
ethernet *chassis number/port number*	Configures a static mrouter on the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Configures a static mrouter on the specified LAG. The *LAG number* is from 1 to 4096.

To remove all static multicast router ports, use the following command:

no ip igmp snooping mrouter interface all

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command configures interface ethernet 1/12 as a static mrouter port:

```
Switch(config-vlan)# ip igmp snooping mrouter interface ethernet 1/12
```

ip igmp snooping querier

Enables or disables the Internet Group Management Protocol (IGMP) snooping querier on the current VLAN.

Syntax

[no] ip igmp snooping querier *<querier address>*

where:

Parameter	Function
querier address	The IPv4 address of the snooping querier.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables the IGMP Snooping querier:

```
Switch(config-vlan)# ip igmp snooping querier 10.124.54.66
```

ip igmp snooping querier-timeout

Configures the querier timeout interval.

Syntax

[no] ip igmp snooping querier-timeout *<timeout interval>*

where:

Parameter	Function
timeout interval	Querier timeout interval, in seconds (a number from1 to 65535). The default value is 255.

Using **no** before the command restores the default settings.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the querier timeout interval to 400:

```
Switch(config-vlan)# ip igmp snooping querier-timeout 400
```

ip igmp snooping query-interval

Configures the IGMP router query interval, in seconds.

Syntax

[no] ip igmp snooping query-interval *<time interval>*

where:

Parameter	Function
time interval	IGMP query interval, in seconds (a number from 1 to 18000). The default value is 125.

Using **no** before the command restores the default settings.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the query interval to 200:

```
Switch(config-vlan)# ip igmp snooping query-interval 200
```

ip igmp snooping query-max-response-time

Configures the maximum time, in seconds, allowed before responding to a Membership Query message.

Syntax

[no] ip igmp snooping query-max-response-time *<time interval>*

where:

Parameter	Function
time interval	Maximum response time allowed before responding to a query message (a number from 1 to 25). The default value is 10.

Using **no** before the command restores the default settings.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the maximum response time to 25:

```
Switch(config-vlan)# ip igmp snooping query-max-response-time 25
```

ip igmp snooping report-suppression

Enables or disables the suppression of Internet Group Management Protocol (IGMP) snooping reports.

When enabled, the snooping switch only sends the first report for a group to the multicast routers. Subsequent reports for the same group are not forwarded to the multicast router.

When disabled, all reports are forwarded to multicast routers. This report suppression is applied only for IGMP v1 and v2 reports.

By default, report suppression is enabled.

Syntax

[no] ip igmp snooping report-suppression

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enables IGMP Snooping report suppression:

```
Switch(config-vlan)# ip igmp snooping report-suppression
```

ip igmp snooping robustness-variable

Configures the IGMP Robustness variable.

Syntax

[no] ip igmp snooping robustness-variable *<robustness value>*

where:

Parameter	Function
robustness value	Robustness value (a number from 1 to 7). The default value is 2.

Using **no** before the command restores the default settings.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets IGMP robustness value to 5:

```
Switch(config-vlan)# ip igmp snooping robustness-variable 5
```

ip igmp snooping startup-query-count

Configures the Startup Query Count, which is the number of IGMP Queries sent out at startup. Each Query is separated by the Startup Query Interval.

Syntax

[no] ip igmp snooping startup-query-count *<number of queries>*

where:

Parameter	Function
number of queries	Number of queries (a number from 1 to 10). The default value is 2.

Using **no** before the command restores the default settings.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the startup query count value to 5:

```
Switch(config-vlan)# ip igmp snooping startup-query-count 5
```

ip igmp snooping startup-query-interval

Configures the Startup Query Interval, which is the interval between General Queries sent out at startup.

Syntax

[no] ip igmp snooping startup-query-interval *<time interval>*

where:

Parameter	Function
time interval	Query interval at startup, in seconds. (a number from 1 to 18000). The default value is 31.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets the startup query interval to 100 seconds:

```
Switch(config-vlan)# ip igmp snooping startup-query-interval 100
```

ip igmp snooping static-group

Configures a static member for a multicast group.

Syntax

[no] ip igmp snooping static-group *<multicast address>* **[source**
<IP address>] **interface {ethernet** *<chassis number/port number>*|
port-channel *<LAG number>*}

where:

Parameter	Function
multicast address	Specified multicast IP address.
source *<IP address>*	Configures a Multicast Address to join.
ethernet *<chassis number/port number>*	Configures a multicast group static member for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *<LAG number>*	Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets a new static member for a multicast group on a VLAN:

```
Switch(config-vlan)# ip igmp snooping static-group source 1.1.1.1
interface port-channel 5
```

ip igmp snooping version

Configures the IGMP Snooping version.

Syntax

[no] ip igmp snooping version *<version number>*

where:

Parameter	Function
version number	IGMP Snooping version number (2 or 3). The default version is 3.

Modes

VLAN Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command sets IGMP Snooping version number 2:

```
Switch(config-vlan)# ip igmp snooping version 2
```

name

Assigns a name to the VLAN or changes the existing name. The default VLAN name is the first one.

Syntax

[**no**] **name**

Using **no** before the command sets the VLAN name to default VLAN name.

Modes

VLAN Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to configure a VLAN name:

```
Switch(config-vlan)# name VLAN0002
```

state

Activates or suspends a VLAN. The default state is active.

Syntax

[no] **state** {**active|suspend**}

Using **no** before the command restores the default settings.

Modes

VLAN Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following shows how to suspend a VLAN:

```
Switch(config-vlan)# state suspend
```

Chapter 28. VRRP Mode Commands

Virtual Router Redundancy Protocol (VRRP) Configuration Mode commands are a subset of Interface Mode commands. This chapter describes the commands needed to enter and use VRRP Configuration Mode.

vrrp

Enters Virtual Router Redundancy Protocol (VRRP) configuration mode for an interface.

Syntax

vrrp *<virtual router identifier>* [**ipv6**]

where:

Parameter	Description
virtual router identifier	The virtual router identifier; an integer from 1-255.
ipv6	Optional; assume IPv6 address family.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command enters VRRP mode, configuring virtual router 2:

```
Switch(config-if)# vrrp 2
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

accept-mode

Sets accept mode for the session for a virtual router.

Syntax

[no] **accept-mode**

Using **no** before the command negates it.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command sets accept mode for the virtual router:

```
Switch(config-if-vrrp)# accept-mode
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

address

Sets the IP address for the session for a virtual router.

Syntax

[no] **address** *<IP address>*

where:

Parameter	Description
IP address	An IPv4 or IPv6 address.

Using **no** before the command removes the IP address.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command sets the IP address to 10.2.2.55 for the virtual router:

```
Switch(config-if-vrrp)# address 10.2.2.55
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

advertisement-interval

Sets the advertisement interval for the session for a virtual router.

Syntax

[no] **advertisement-interval** *<interval>*

where:

Parameter	Description
interval	The advertisement interval, in hundredths of a second, in multiples of 5; an integer from 5-4095.

Using **no** before the command removes the advertisement interval.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command sets the advertisement interval to 1000 (ten seconds) for the virtual router:

```
Switch(config-if-vrrp)# advertisement-interval 1000
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

preempt

Sets preempt for the session for a virtual router.

Syntax

[no] **preempt**

Using **no** before the command removes preempt mode.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command sets preempt mode for the session for the virtual router:

```
Switch(config-if-vrrp)# preempt
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

priority

Sets the router priority within the virtual router.

Syntax

[**no**] **priority** *<priority>*

where:

Parameter	Description
priority	The router priority within virtual router; an integer from 1-254, or 255 if your own router.

Using **no** before the command removes the priority.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command sets the priority to 2 for the virtual router:

```
Switch(config-if-vrrp)# priority 2
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

shutdown

Disables VRRP for this session on this virtual router.

Syntax

shutdown

Using **no** before the command negates it.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command disables VRRP for this session on this virtual router:

```
Switch(config-if-vrrp)# shutdown
```

Restrictions

This command only works on virtual routers.

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

switch-back-delay

Sets the virtual router switch-back delay interval.

Syntax

[no] **switch-back-delay** *<interval>*

where:

Parameter	Description
interval	The switch-back delay, in milliseconds; an integer from 1-500000.

Using **no** before the command without any argument removes the switch-back delay.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command sets the switch-back delay to 3000 milliseconds for the virtual router:

```
Switch(config-if-vrrp)# switch-back-delay 3000
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

track interface

Enables failover tracking for the specified interface for this VRRP session.

Syntax

[**no**] **track interface** *<interface name>* **priority** *<priority>*

where:

Parameter	Description
interface name	The name of the interface.
priority	The priority delta; an integer from 1-253.

Using **no** before the command removes failover tracking from the specified interface.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

- This command only works on virtual routers.
- The interface must already exist for this command to work.
- VRRP tracking cannot be applied to a VRRP bound interface.
- VRRP tracking can be applied only to Layer 3 interfaces.

Example

The following command enables failover tracking for the interface MyInterface with a priority of 2 on the virtual router:

```
Switch(config-if-vrrp)# track interface MyInterface priority 2
```

When MyInterface goes down, the priority is decremented by 2 of this VR.

track interface ethernet

Enables failover tracking for the specified ethernet interface for this VRRP session.

Syntax

[**no**] **track interface ethernet** *<slot>*/*<chassis>* **priority** *<priority>*

where:

Parameter	Description
slot	The ethernet slot number.
chassis	The ethernet chassis number
priority	The priority delta; an integer from 1-253.

Using **no** before the command removes failover tracking from the specified interface.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

● This command only works on virtual interfaces.

● The interface must already exist for this command to work.

● VRRP tracking cannot be applied to a VRRP bound interface.

● VRRP tracking can be applied only to Layer 3 interfaces.

Example

The following command enables failover tracking for the interface 1/1 with a priority delta of 3 on the virtual router:

```
Switch(config-if-vrrp)# track interface ethernet 1/1 priority 3
```

track interface vlan

Enables failover tracking for the specified VLAN interface for this VRRP session.

Syntax

[no] **track interface vlan** *<VLAN number>* **priority** *<priority>*

where:

Parameter	Description
VLAN number	The VLAN number; an integer from 1-4094.
priority	The priority delta; an integer from 1-253.

Using **no** before the command removes failover tracking from the specified interface.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

- This command only works on virtual interfaces.
- The VLAN must already exist for this command to work.
- VRRP tracking cannot be applied to a VRRP bound interface.
- VRRP tracking can be applied only to Layer 3 interfaces.

Example

The following command enables failover tracking for vlan 2 with a priority delta of 3 on the virtual router:

```
Switch(config-if-vrrp)# track interface vlan 2 priority 3
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

v2-compatible

Enables backwards compatibility for the specified VLAN interface for this VRRP session.

Syntax

[no] **v2-compatible**

Using **no** before the command disables backwards compatibility for the specified interface.

Modes

VRRP Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Restrictions

This command only works on virtual routers.

Example

The following command enables backwards compatibility on the virtual router:

```
Switch(config-if-vrrp)# v2-compatible
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
vrrp	Enter VRRP Configuration Mode.

Chapter 29. VTEP Mode Commands

NSX is a VMware solution for network virtualization. Lenovo's NSX gateway provides a Hardware Switch Controller (HSC) Virtual Extensible LAN (VXLAN) Tunnel Endpoint (VTEP) that enables legacy network devices to communicate with Virtual Machines (VMs) hosted by NSX-V hypervisors.

This chapter describes the commands needed to enter and use VTEP Configuration Mode.

Note: The commands in this chapter apply to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

hsc mode vtep

Enables Hardware Switch Controller (HSC) VxLAN Tunnel Endpoint (VTEP) mode.

Syntax

hsc mode vtep

The following command disables the HSC and any mode associated with it:

no hsc mode

Modes

Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command enables HSC VTEP mode:

```
Switch(config)# hsc mode vtep
```

hsc vtep

Enters HSC VxLAN Tunnel Endpoint (VTEP) configuration mode.

Syntax

hsc vtep

Modes

Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command enters HSC VTEP configuration mode:

```
Switch(config)# hsc vtep
Switch(config-vtep)#
```

Related Commands

Command	Description
hsc mode vtep	Enables HSC VTEP mode

device-name

Sets the device name that is inserted into the `Physical_Switch` table.

Syntax

device-name *<device-name>*

where:

Parameter	Function
device-name	The name of the device to insert into the Physical_Switch table.

The following command resets the device name in the `Physical_Switch` table:

no device-name

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command enters the device named mydevice into the
`Physical_Switch` table:

```
Switch(config-vtep)# device-name mydevice
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

ha mode vlag

Sets VTEP High Availability (HA) VLAG mode.

Syntax

ha mode vlag

The following command resets VTEP High Availability (HA) mode, causing all VTEPs to be treated as standalone VTEPs:

no ha mode

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets VTEP HA VLAG mode:

```
Switch(config-vtep)# ha mode vlag
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

controller ip

Sets the controller IP address.

Syntax

`controller ip` *<IP address>*

where:

Parameter	Function
IP address	The IPv4 address in the format *A.B.C.D.*

The following command resets the controller configuration:

`no controller`

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the controller IP address to `10.11.12.13`:

```
Switch(config-vtep)# controller ip 10.11.12.13
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

controller port

Sets the controller TCP port number.

Syntax

controller port *<TCP port>*

where:

Parameter	Function
TCP port	The TCP port number; an integer from 1-65535. Default value: 6640.

The following command resets the controller configuration:

no controller

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the controller TCP port number to 1020:

```
Switch(config)# controller port 1020
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

controller provider nsx

Sets the controller provider to VMware NSX.

Syntax

controller provider nsx

The following command resets the controller configuration:

no controller

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the controller provider to VMware NSX:

```
Switch(config)# controller provider nsx
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

controller vrf

Sets the controller Virtual Routing and Forwarding (VRF).

Syntax

controller vrf {default|management}

where:

Parameter	Description
default	Default VRF. For data interfaces, a default VRF with ID 0 is created. All data IP interfaces are attached to the default VRF.
management	Management VRF. For management interface, a default VRF with ID 1 is created; this is the default value used by the gateway to communicate with the controllers.

The following command resets the controller configuration:

no controller

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the controller VRF to the default VRF:

```
Switch(config-vtep)# controller vrf default
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

tunnel ip

Sets the VTEP tunnel IP address.

Syntax

tunnel ip *<IP address>*

where:

Parameter	Function
IP address	The IPv4 address in the format *A.B.C.D.*

The following command resets VTEP tunnel configuration:

no tunnel

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the VTEP tunnel IP address to 10.12.13.14:

```
Switch(config-vtep)# tunnel ip 10.12.13.14
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep ip

Sets the VTEP IP address for the specified VTEP instance.

Syntax

vtep *<VTEP instance>* **ip** *<IP address>*

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.
IP address	The IPv4 address in the format *A.B.C.D*.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the IP address for VTEP instance 1 to `10.14.15.16`:

```
Switch(config-vtep)# vtep 1 ip 10.14.15.16
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep username

Sets the VTEP username and password for the specified VTEP instance.

Syntax

vtep *<VTEP instance>* **username** *<username>* **password** *<password>*

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.
username	The VTEP user.
password	The password for the VTEP user.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the VTEP username and password to vuser/vpass for VTEP instance 1:

```
Switch(config-vtep)# vtep 1 username vuser password vpass
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vrf

Sets the VTEP VRF for the specified VTEP instance.

Syntax

vtep *<VTEP instance>* **vrf {default|management}**

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.
default	Default VRF. For data interfaces, a default VRF with ID 0 is created. All data IP interfaces are attached to the default VRF.
management	Management VRF. By default, a VRF with ID1 is created.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command sets the VTEP VRF for VTEP instance 1 to management:

```
Switch(config-vtep)# vtep 1 vrf management
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vxlan-ports ethernet

Configures a VxLAN-enabled ethernet port list.

Syntax

vtep *<VTEP instance>* **vxlan-ports ethernet [add|remove]** *<port list>*

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.
add	(Optional) Add the VTEP instance to the specified port or port list.
remove	(Optional) Remove the VTEP instance from the specified port or port list.
port lists	Ethernet interface ports or port list such as 1/1,1/3-10.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command creates a VxLAN-enabled ethernet port list on ethernet port 1/1:

```
Switch(config-vtep)# vtep 1 vxlan-ports ethernet 1/1
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vxlan-ports ethernet none

Removes a VxLAN-enabled ethernet port list.

Syntax

vtep *<VTEP instance>* **vxlan-ports ethernet none**

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command clears VTEP instance 1 of all VxLAN-enabled ethernet ports:

```
Switch(config-vtep)# vtep 1 vxlan-ports ethernet none
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vxlan-ports port-channel

Configures a VxLAN-enabled port-channel list.

Syntax

vtep *<VTEP instance>* **vxlan-ports port-channel [add|remove]** *<port aggregation list>*

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.
add	(Optional) Add the VTEP instance to the specified port aggregation or port aggregation list.
remove	(Optional) Remove the VTEP instance from the specified port aggregation or port aggregation list.
port aggregation list	Port aggregation or a port aggregation list such as `1,3,5-9`.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command creates a VxLAN-enabled port aggregation list on port aggregations 1 through 3 and 5 through 9:

```
Switch(config-vtep)# vtep 1 vxlan-ports port-channel 1-3,5-9
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vxlan-ports port-channel none

Removes a VxLAN-enabled port aggregation list.

Syntax

vtep *<VTEP instance>* **vxlan-ports port-channel none**

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command clears VTEP instance 1 of all VxLAN-enabled port aggregations:

```
Switch(config-vtep)# vtep 1 vxlan-ports port-channel none
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vxlan-ports vlag-instance

Configures a VxLAN-enabled VLAG instance list.

Syntax

vtep *<VTEP instance>* **vxlan-ports vlag-instance [add|remove]**
<VLAG instance list>

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.
add	(Optional) Add the VTEP instance to the specified VLAG instance or VLAG instance list.
remove	(Optional) Remove the VTEP instance from the specified VLAG instance or VLAG instance list.
VLAG instance list	VLAG or a VLAG list such as 1,3,5-9.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command creates a VxLAN-enabled VLAG instance list on VLAG instances 1 through 3 and 6 through 10:

```
Switch(config-vtep)# vtep 1 vxlan-ports vlag-instance 1-3,6-10
```

Restrictions

This command only works when HA is in VLAG mode.

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

vtep vxlan-ports vlag-instance none

Removes a VxLAN-enabled VLAG-instance list.

Syntax

vtep *<VTEP instance>* **vxlan-ports vlag-instance none**

where:

Parameter	Function
VTEP instance	The VTEP instance number; either 1 or 2.

The following command resets the VTEP configuration on the specified VTEP instance:

no vtep *<VTEP instance>*

Modes

VTEP Configuration Mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Example

The following command clears VTEP instance 1 of all VxLAN-enabled VLAG instances:

```
Switch(config-vtep)# vtep 1 vxlan-ports vlag-instance none
```

Related Commands

Command	Description
hsc vtep	Enter HSC VTEP Configuration Mode.

Chapter 30. VDM Commands

This chapter describes how to enter Virtual Domain Manager (VDM) Configuration Mode and the commands available in this mode.

vdm

Enter VDM Configuration Mode for Nutanix or VMware.

Syntax

`[no] vdm {nutanix|vmware}`

Using **no** before the command removes the VDM configuration from the switch.

Modes

Configuration Mode

History

Release	Modification
10.3	The command was introduced.
10.7	Added the **vmware** option.

Example

The following command shows how to enter VDM Configuration mode for Nutanix Cloud Manager:

```
Switch(config)# vdm nutanix
Switch(config-vdm)#
```

add interface

Adds switch interfaces to be managed by the VDM (Nutanix and VMware).

Syntax

add interface {ethernet *<chassis number/port number>***|**
port-channel *<LAG number>***}**

where:

Parameter	Description
ethernet *chassis number/port number*	Adds the specified ethernet port to the VDM. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Adds the specified Link Aggregation Group (LAG) to the VDM. *LAG number* is an integer from 1 to 4096.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command adds ethernet interface 1/12 to the VDM:

```
Switch(config-vdm)# add interface ethernet 1/12
```

ip address

Configures the IP address of the VDM (Nutanix and VMware).

Syntax

ip address *<IPv4 address>* **vrf {default|management}**

where:

Parameter	Description
IPv4 address	The IP address of the VDM in IPv4 format (*X.X.X.X*).
vrf	Specifies the Virtual Routing and Forwarding (VRF) instance used for VDM access.
default	Configures VDM to use the default VRF instance.
management	Configures VDM to use the management VRF instance.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the IP address of the VDM:

```
Switch(config-vdm)# ip address 10.130.76.8
```

The following command configures the IP address of the VDM and configures VDM to use the default VRF instance for access:

```
Switch(config-vdm)# ip address 10.130.76.8 vrf default
```

refresh-vms-url

Configures the Uniform Resource Locator (URL) used by the VDM to refresh the virtual machine information.

Note: This command is used for Nutanix only.

Syntax

[no] refresh-vms-url *<URL>*

where:

Parameter	Description
URL	The URL of the machine offering the virtual machine information.

Using **no** before the command removes the URL for refreshing the virtual machine information.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the virtual machine information refresh URL:

```
Switch(config-vdm)# refresh-vms-url https://<NUTANIX CLUSTER>:9440/api/
/nutanix/v3/vms/list
```

refresh-vnet-url

Configures the Uniform Resource Locator (URL) used by the VDM to refresh the virtual network information.

Note: This command is used for Nutanix only.

Syntax

[no] refresh-vnet-url *<URL>*

where:

Parameter	Description
URL	The URL of the machine offering the virtual network information.

Using **no** before the command removes the URL for refreshing the virtual network information.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the virtual network information refresh URL:

```
Switch(config-vdm)# refresh-vnet-url https://<NUTANIX CLUSTER>:9440/api/
/nutanix/v3/networks/list
```

remove interface

Removes switch interfaces from being managed by the VDM (Nutanix and VMware).

Syntax

remove interface {ethernet *<chassis number/port number>***| port-channel** *<LAG number>***}**

where:

Parameter	Description
ethernet *chassis number/port number*	Removes the specified ethernet port from the VDM. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Removes the specified Link Aggregation Group (LAG) from the VDM. *LAG number* is an integer from 1 to 4096.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command removes ethernet interface 1/12 from the VDM:

```
Switch(config-vdm)# remove interface ethernet 1/12
```

subscribe

Subscribes to events generated by VDM.

Note: This command is used for Nutanix only.

Syntax

subscribe server-url *<URL>* **client-url** *<URL>* **{vm|vnetwork}**

where:

Parameter	Description
server-url *URL*	Configures the URL of the VDM.
client-url *URL*	Configures the URL of the switch.
vm	Subscribes to virtual machine events.
vnetwork	Subscribes to virtual network events.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command subscribes to events generated by VDM:

```
Switch(config-vdm)# subscribe server-url https://<CLUSTER>:9440/api/
nutanix/v3/webhooks client-url
https://<ip>:443/nos/api/cfg/nutanix/network vnetwork
```

```
Switch(config-vdm)# subscribe server-url https://<CLUSTER>:9440/api/
nutanix/v3/webhooks client-url
http://<ip>:8090/nos/api/cfg/nutanix/network vnetwork
```

```
Switch(config-vdm)# subscribe server-url https://<CLUSTER>:9440/api/
nutanix/v3/webhooks client-url https://<ip>:443/nos/api/cfg/nutanix/vm vm
```

```
Switch(config-vdm)# subscribe server-url https://<CLUSTER>:9440/api/
nutanix/v3/webhooks client-url http://<ip>:8090/nos/api/cfg/nutanix/vm vm
```

topo-discovery-url

Configures the topology discovery Uniform Resource Locator (URL) used to query the VDM for all virtual machines (VMs) attached to the switch interfaces.

Note: This command is used for Nutanix only.

Syntax

topo-discovery-url *<URL>* **[query-delay** *<seconds>*]

where:

Parameter	Description
URL	The URL used to discover VMs attached to the switch.
query-delay *seconds*	Topology query delay time, in seconds; an integer from 1-60. Default value: 5.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the topology discovery URL:

```
Switch(config-vdm)# topo-discovery-url
https://<ip>:9440/PrismGateway/services/rest/v1/vms
```

topo-startup-delay

Configures the topology startup delay used to query the VDM for all virtual machines (VMs) attached to the switch interfaces.

Note: This command is used for Nutanix only.

Syntax

topo-startup-delay *<seconds>*

where:

Parameter	Description
seconds	The topology startup delay time, in seconds; an integer from 1-300. Default value: 90. **Note:** This must be higher than the vLAG startup delay.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures the topology discovery URL:

```
Switch(config-vdm)# topo-startup-delay 120
```

unsubscribe

Unsubscribes from events generated by VDM.

Note: This command is used for Nutanix only.

Syntax

unsubscribe server-url *<URL>* **client-url** *<URL>* **{vm|vnetwork}**

where:

Parameter	Description
server-url *URL*	Configures the URL of the VDM.
client-url *URL*	Configures the URL of the switch.
vm	Unsubscribes from VM events.
vnetwork	Unsubscribes from VNETWORK events.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command unsubscribes from events generated by VDM:

```
Switch(config-vdm)# unsubscribe server-url https://<CLUSTER>:9440/api/
nutanix/v3/webhooks client-url https://switch_url
```

username

Configures the user credentials (username and associated password) for the VDM (Nutanix and VMware).

Syntax

username *<username>* **password [encrypted]** *<password>*

where:

Parameter	Description
username	The name of the user.
encrypted	The specified password is encrypted.
password	The password associated with the specified username.

Modes

VDM Configuration Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command configures an username and an encrypted password for the VDM:

```
Switch(config-vdm)# username User1 password encrypted myPassword
```

The following command configures an username with a regular password for the VDM:

```
Switch(config-vdm)# username User1 password myPassword
```

vm

Associates an ACL/QoS/Queueing policy to a Virtual machine. The ACL and QoS policies will be attached on the auto-policy interface for the inbound packets. Queuing policy will be attached on the auto-policy interface for the outbound packets.

Syntax

vm {name *<VM name>* **| uuid** *<VM UUID>***} vnic {vlan** *<VID>* **| ip** *<IP address>* **| mac** *<MAC address>***} attach {security-policy|qos-policy|queueing-policy}** *<policy name>* **in**

where:

Parameter	Description
VM name	The Virtual Machine name, in quotes.
VM UUID	The VM UUID.
VID	The VLAN ID.
IP address	The IP address.
MAC address	The MAC address.
attach	Attach a policy for inbound packets. One of: ● **security-policy|** ● **qos-policy** ● **queueing-policy**
policy name	The name of the security policy.

Modes

VDM Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command configures the Virtual Machine information for inbound packets:

```
Switch(config-vdm)# vm name test vnic ip 1.1.1.1 attach security-policy
test1 in
```

vnic-stats

Enables or disables the periodically collection of vnic-stats for a VM.

Syntax

vnic-stats {enable | interval *<seconds>***}**

where:

Parameter	Description
enable	Enables collecting vNIC statistics.
interval *seconds*	Configures the vNIC statitics interval. The interval value depends on the used VDM, as following: ● Nutanix: an integer from 30-3600. The default value is 30. ● VMware: an integer from 300-86400. The default value is 300.

Modes

VDM Configuration Mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command enables the collection of vNIC statistics:

```
Switch(config-vdm)# vnic-stats enable
```

Chapter 31. EVC Service Mode Commands

Ethernet Virtual Connection (EVC) service commands configure an EVC service. To execute them, you must first enter Interface Mode. For more information on Interface Mode, see Chapter 5, "Interface Mode Commands."

service

Enter EVC Service Mode.

Syntax

service instance *<Instance ID>* **evc-id** *<EVC ID>*

where:

Parameter	Description
Instance ID	The instance ID to map to the EVC
EVC ID	The EVC ID of the SVLAN.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters EVC service configuration mode with instance ID 1 and EVC ID 1:

```
Switch(config-if)# service instance 1 evc-id 1
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.

exit-service-instance-mode

Exit EVC Service Mode and return to Interface mode

Syntax

exit-service-instance-mode

where:

Parameter	Description
Instance ID	The instance ID to map to the EVC
EVC ID	The EVC ID of the SVLAN.

Modes

Service Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command exits EVC service configuration mode:

```
Switch(if-service-instance)# exit-service-instance-mode
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
service	Enter EVC Service Configuration Mode

service instance

Enter an EVC Service Mode instance.

Syntax

service instance *<Instance ID>* **evc-id** *<EVC ID>*

where:

Parameter	Description
Instance ID	The instance ID to map to the EVC
EVC ID	The EVC ID of the SVLAN.

Modes

Interface Configuration Mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command enters an EVC service with instance ID 1 and EVC ID 1:

```
Switch(if-service-instance)# service instance 1 evc-id 1
```

Related Commands

Command	Description
interface	Enter Interface Configuration Mode.
service	Enter EVC Service Configuration Mode

Chapter 32. Show Commands

The commands in this chapter show information and statistics about the switch.

show aaa accounting

Displays the current Authentication, Authorization and Accounting (AAA) accounting settings.

Syntax

show aaa accounting

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the current accounting settings:

```
Switch> show aaa accounting

               default: local
               console: local
```

show aaa authentication

Displays the current Authentication, Authorization and Accounting (AAA) authentication settings.

Syntax

show aaa authentication [login error-enable]

where:

Parameter	Function
login error-enable	Displays the status of the error-enable option.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the current authentication settings:

```
Switch> show aaa authentication

            default: local
            console: local
```

The following command displays the current status of the error-enable option:

```
Switch> show aaa authentication login error-enable

disabled
```

show aaa authorization

Displays the current Authentication, Authorization and Accounting (AAA) authorization settings.

Syntax

`show aaa authorization [all]`

where:

Parameter	Function
all	Displays all authorization settings, including the switch default configuration.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the current authorization settings:

```
Switch> show aaa authorization
```

The following command displays the current authorization and default switch configuration:

```
Switch> show aaa authorization all

AAA command authorization:
 local
AAA config-command authorization:
 loca
```

show aaa groups

Displays the current configured Authentication, Authorization and Accounting (AAA) groups.

Syntax

show aaa groups

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the currently configured AAA groups:

```
Switch> show aaa groups

radius
```

show aaa user default-role

Displays the default role a user takes if authenticated by Authentication, Authorization and Accounting (AAA) and the server does not reply with user role information.

Syntax

```
show aaa user default-role
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the user's current default role:

```
Switch> show aaa user default-role

enabled
```

show access-lists

Displays all the configured Access Control Lists (ACLs).

Syntax

show access-lists [*<access-list name>***] [expanded|summary]**

where:

Parameter	Function
access-list name	The name of the ACL.
expanded	Displays the contents of each ACE (Access Control Entry).
summary	Displays a summary of each ACL, including the total number of configured ACEs and the interfaces on which the ACL is configured or active.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following commands show ACLs:

```
Switch> show access-lists
IP access list  copp-system-acl-authentication
       10 permit tcp any eq 389 any
       20 permit udp any eq 1812 any
       30 permit udp any eq 1813 any
IP access list  copp-system-acl-domain
       10 permit tcp any eq domain any
       20 permit udp any eq domain any
IP access list  copp-system-acl-igmp
       10 permit igmp any any [match=132]
IP access list  copp-system-acl-igmp-query
       10 permit igmp any any 17 [match=42]
IP access list  copp-system-acl-ntp
       10 permit udp any eq ntp any
IP access list  copp-system-acl-pim
       10 permit pim any any
IP access list  copp-system-acl-ping
       10 permit icmp any any 30 O
       20 permit icmp any any echo
       30 permit icmp any any echo-reply
IP access list  copp-system-acl-slp
       10 permit udp any any eq 427
IP access list  copp-system-acl-snmp
       10 permit udp any any eq snmp
       20 permit udp any any eq snmptrap
IP access list  copp-system-acl-ssh
       10 permit tcp any eq 22 any
       20 permit tcp any any eq 22
IP access list  copp-system-acl-telnet
       10 permit tcp any any eq telnet
       20 permit tcp any eq telnet any
IP access list  copp-system-acl-tftp
       10 permit udp any any eq tftp
       20 permit udp any eq tftp any
IP access list  ipacl1
       10 remark remark for ipacl1
MAC access list  123
       statistics per-entry
       10 deny any host 0111.0111.0111
       20 remark My Access List
IPv6 access list  copp-system-acl-pingv6
       10 permit icmp echo-reply
       20 permit icmp echo-request
```

show alias

Displays the configured command aliases.

Syntax

show alias

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays the configured command aliases:

```
Switch> show alias

CLI alias information
Total number : 2
====================
neidyn   : neighbor 1.1.1.0/32
dvlan135 : show vlan id 135
```

show alias-config

Displays the contents of the command alias configuration file.

Syntax

show alias-config

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays the commands used to define the command aliases:

```
Switch> show alias-config

alias neidyn neighbor 1.1.1.0/32
alias dvlan135 show vlan id 135
```

show arp access-lists

Displays Access Control Lists (ACLs) applied to Address Resolution Protocol (ARP) packets.

Syntax

show arp access-lists [_<access-list name>_**]**

where:

Parameter	Function
access-list name	The name of the ACL.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays ACLs applied to ARP packets:

```
Switch> show arp access-lists
ARP access list  arp-acl1
        10 remark remark for ARP ACL
```

show banner motd

Displays the login banner or motd (message of the day).

Syntax

```
show banner motd
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the login banner:

```
Switch> show banner motd

This is the message of the day.
```

show bfd

Displays Bidirectional Forwarding Detection (BFD) information.

Syntax

show bfd

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD information:

```
Switch> show bfd

BFD ID: OO     Start Time:Thu Jan  1 00:00:32 1970
BFD Admin State: DOWN
Number of Sessions:    O
Slow Timer: 2OOO
BFD Notifications disabled
Next Session Discriminator:    1
```

show bfd neighbors

Displays Bidirectional Forwarding Detection (BFD) neighbors.

Syntax

show bfd neighbors [details]

where:

Parameter	Function
details	Displays all BFD protocol parameters and timers for each neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD neighbor information:

```
Switch> show bfd neighbors
Codes: LD/RD       - Local Discriminator/Remote Discriminator
       RH/RD       - Remote Heard/Remote State
OurAddr          NeighAddr          LD/RD  RH/RS    Holdown(mult) State
Interface
23.1.1.1         23.1.1.2            2/1     UP       300( 3)
UP    Vlan23

OurAddr          NeighAddr          LD/RD  RH/RS    Holdown(mult) State
Interface
24.1.1.1          24.1.1.2           4/2     ADMIN_DOWN 6000( 3)   DOWN
Vlan24

OurAddr          NeighAddr          LD/RD  RH/RS    Holdown(mult) State
Interface
190.1.1.1        190.1.1.2           5/0     DOWN     0( 0)
DOWN  Ethernet1/2
```

show bfd neighbors application

Displays Bidirectional Forwarding Detection (BFD) information for the specified protocol on which BFD is enabled.

Syntax

show bfd neighbors application *<protocol name>* **[details]**

where:

Parameter	Function
protocol name	The name of the protocol. The *protocol name* parameter can have only one of the following values: ● bgp ● ospf
details	Displays all BFD protocol parameters and timers for each neighbor.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD neighbor information for BGP:

```
Switch> show bfd neighbors application bgp
```

show bfd neighbors dest-ip

Displays Bidirectional Forwarding Detection (BFD) information for the specified destination IPv4 or IPv6 address.

Syntax

show bfd neighbors dest-ip *<destination IPv4 or IPv6 address>* **[src-ip** *<source IPv4 or IPv6 address>***] [details]**

where:

Parameter	Function
destination IPv4 or IPv6 address	The destination IPv4 or IPv6 address.
src-ip *<source IPv4 or IPv6 address>*	Displays BFD neighbor information for the specified pair of destination and source IPv4 or IPv6 addresses. **Note:** The destination and source IP addresses must be of the same type, either IPv4 or IPv6.
details	Displays all BFD protocol parameters and timers for each neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD neighbor information for destination IPv4 address 10.245.34.22:

```
Switch> show bfd neighbors dest-ip 10.245.34.22
```

show bfd neighbors interface

Displays Bidirectional Forwarding Detection (BFD) information for the specified interface.

Syntax

show bfd neighbors interface *‹interface name›* **[details]**

where:

Parameter	Function
interface name	The name of the interface.
details	Displays all BFD protocol parameters and timers for each neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD information for interface Ethernet 1/12:

```
Switch> show bfd neighbors interface ethernet1/12
```

show bfd neighbors src-ip

Displays Bidirectional Forwarding Detection (BFD) information for the specified source IPv4 or IPv6 address.

Syntax

show bfd neighbors src-ip *<source IPv4 or IPv6 address>* **[dest-ip** *<destination IPv4 or IPv6 address>***] [details]**

where:

Parameter	Function
source IPv4 or IPv6 address	The source IPv4 or IPv6 address.
dest-ip *<destination IPv4 or IPv6 address>*	Displays BFD neighbor information for the specified pair of source and destination IPv4 or IPv6 addresses. **Note:** The source and destination IP addresses must be of the same type, either IPv4 or IPv6.
details	Displays all BFD protocol parameters and timers for each neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD neighbor information for source IPv4 address 10.245.34.22:

```
Switch> show bfd neighbors src-ip 10.245.34.22
```

show bfd neighbors vrf

Displays Bidirectional Forwarding Detection (BFD) neighbors associated with the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

show bfd neighbors vrf {all|default|management} [details]

where:

Parameter	Function
`all`	Displays BFD information about the neighbors associated with all VRF instances.
`default`	Displays BFD information about the neighbors associated with the default VRF instance.
`management`	Displays BFD information about the neighbors associated with the management VRF instance.
`details`	Displays detailed BFD information about the neighbors associated with the specified VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BFD neighbors associated with the default VRF instance:

```
Switch> show bfd neighbors vrf default
```

show bgp

Displays Border Gateway Protocol (BGP) route information.

Syntax

show bgp [{ipv4|ipv6} unicast] [*<IPv4 or IPv6 network address>***
[/***<prefix length>*** [longer-prefixes]]]**

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
IPv4 or IPv6 network address	The IPv4 or IPv6 network address.
prefix length	The IPv4 or IPv6 network mask length.
longer-prefixes	Displays BGP route information for the specified network and any subnetworks with a prefix length equal to or greater than the prefix specified.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP route information:

```
Switch> show bgp
```

show bgp community

Displays Border Gateway Protocol (BGP) routes that match the specified community.

Syntax

show bgp [all|{ip|ipv4|ipv6} unicast] community [*<community number>* **[exact-match]] [local-AS] [no-advertise] [no-export]**

where:

Parameter	Function
all	Displays BGP information for all IP address families.
ip/ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
community number	The number of the BGP community. The format for the community number is AA:NN (autonomous system number: community number).
exact-match	Displays only an exact match for the specified community.
local-AS	Displays BGP routes not advertised outside the local autonomous system (AS).
no-advertise	Displays BGP routes not advertised to any peer (internal or external).
no-export	Displays BGP routes advertised only to peers in the same AS.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching any community 10:23:

```
Switch> show bgp community 10:23
```

show bgp community vrf

Displays Border Gateway Protocol (BGP) routes that match any community associated with the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

`show bgp [all|{ip|ipv4|ipv6} unicast] community vrf {all| default}`

where:

Parameter	Function
all	Displays BGP information for all IP address families.
ip/ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
all	Displays BGP routes matching communities associated with any VRF instance.
default	Displays BGP routes matching communities associated with the default VRF instance.

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes for communities associated with the default VRF instance:

```
Switch> show bgp community vrf default
```

show bgp community-list

Displays Border Gateway Protocol (BGP) routes that match the specified community list.

Syntax

show bgp [all|{ip|ipv4|ipv6} unicast] community-list
<community list name> **[exact-match] [vrf {all|default}]**

where:

Parameter	Function
all	Displays BGP information for all IP address families.
ip/ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
community list name	The name of the BGP community list.
exact-match	Displays only an exact match for the specified community list.
vrf all	Displays BGP routes matching the specified community list associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP routes matching the specified community list associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the community list 'comlist1':

```
Switch> show bgp community-list comlist1
```

show bgp dampening

Displays Border Gateway Protocol (BGP) dampening information.

Syntax

```
show bgp [{ipv4|ipv6} unicast] dampening {dampened-paths|
flap-statistics|parameters}
```

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
dampened-paths	Displays all dampened paths.
flap-statistics	Displays flap statistics for BGP routes.
parameters	Displays all dampening parameters.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all dampened paths:

```
Switch> show bgp dampening dampened-paths
```

The following command displays flap statistics for BGP routes:

```
Switch> show bgp dampening flap-statistics
```

The following command displays all dampening parameters:

```
Switch> show bgp dampening parameters
```

show bgp filter-list

Displays Border Gateway Protocol (BGP) routes matching a specified filter list.

Syntax

show bgp [{ipv4|ipv6} unicast] filter-list *<filter list name>*

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
filter list name	The name of the BGP filter list.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes that match filter list 'flist3':

```
Switch> show bgp filter-list flist3
```

show bgp inconsistent-as

Displays Border Gateway Protocol (BGP) routes with inconsistent Autonomous System (AS) paths.

Syntax

```
show bgp inconsistent-as
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes with inconsistent AS paths:

```
Switch> show bgp inconsistent-as
```

show bgp neighbors

Displays Border Gateway Protocol (BGP) neighbors.

Syntax

show bgp [{ip|ipv4|ipv6} unicast] neighbors [<*IPv4 or IPv6 address*>
[advertised-routes|received-routes]]

where:

Parameter	Function
ip/ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
advertised-routes	Displays the BGP routes advertised for the specified neighbor.
received-routes	Displays the BGP routes received from the specified neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP neighbors:

```
Switch> show bgp neighbors
```

show bgp neighbors flap-statistics

Displays Border Gateway Protocol (BGP) neighbors.

Syntax

show bgp {ip|ipv4|ipv6} unicast neighbors *<IPv4 or IPv6 address>*
flap-statistics

where:

Parameter	Function
`ip/ipv4`	Displays BGP information for the IPv4 address family.
`ipv6`	Displays BGP information for the IPv6 address family.
`unicast`	Displays BGP information for the unicast address family.
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
`flap-statistics`	Displays the flap statistics for the BGP routes received from the specified neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays flap statistics for the BGP routes received from the neighbor with IPv4 address `10.243.2.54`:

```
Switch> show bgp ipv4 unicast neighbors 10.243.2.54 flap-statistics
```

show bgp neighbors routes

Displays Border Gateway Protocol (BGP) routes received or advertised to or from the specified neighbor.

Syntax

show bgp neighbors *<IPv4 or IPv6 address>* **routes**

where:

Parameter	Function
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all BGP routes received or advertised to or from the neighbor with IPv4 address 10.254.22.36:

```
Switch> show bgp neighbors 10.254.22.36 routes
```

show bgp ip neighbors routes

Displays Border Gateway Protocol (BGP) routes received or advertised to or from the specified neighbor for the IP unicast address family.

Syntax

show bgp {ip|ipv4|ipv6} unicast neighbors *<IPv4 or IPv6 address>*
routes [advertised|dampened|received] [vrf {all|default}]

where:

Parameter	Function
ip/ipv4	Displays BGP routes for the IPv4 address family.
ipv6	Displays BGP routes for the IPv6 address family.
unicast	Displays BGP routes for the unicast address family.
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
advertised	Displays BGP routes advertised for the neighbor.
dampened	Displays all BGP dampened routes received from the specified neighbor.
received	Displays all BGP routes received from the neighbor.
vrf all	Displays all BGP routes associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays all BGP routes associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all BGP routes received or advertised to or from the neighbor with IPv4 address 10.254.22.36:

```
Switch> show bgp ip unicast neighbors 10.254.22.36 routes
```

show bgp neighbors vrf

Displays Border Gateway Protocol (BGP) neighbors associated with the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

show bgp {ip|ipv4|ipv6} unicast neighbors [*<IPv4 or IPv6 address>***] vrf {all|default}**

where:

Parameter	Function
ip/ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
all	Displays BGP neighbors associated with any VRF instance.
default	Displays BGP neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP neighbors associated with the default VRF instance:

```
Switch> show bgp ip unicast neighbors vrf default
```

show bgp nexthop-tracking

Displays Border Gateway Protocol (BGP) next-hop tracking information.

Syntax

```
show bgp nexthop-tracking
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP next-hop tracking information:

```
Switch> show bgp nexthop-tracking

Configured NHT: ENABLED
NHT Critical Delay time-interval for afi 1 safi 1 : 3000 ms
NHT Non Critical Delay time-interval for afi 1 safi 1 : 10000 ms
NHT Critical Delay time-interval for afi 1 safi 2 : 3000 ms
NHT Non Critical Delay time-interval for afi 1 safi 2 : 10000 ms
NHT Critical Delay time-interval for afi 2 safi 1 : 3000 ms
NHT Non Critical Delay time-interval for afi 2 safi 1 : 10000 ms
BGP VRF: (Default) VRF_ID O
BGP Instance: (Default), AS: 23, router-id 10.241.41.21
NHT is Enabled
Recvd Msg count from NSM: O
NHT delay-timer [Index:O] remaining seconds: O
NHT delay-timer [Index:1] remaining seconds: O
NHT delay-timer [Index:2] remaining seconds: O
NHT delay-timer [Index:3] remaining seconds: O
NHT delay-timer [Index:4] remaining seconds: O
NHT delay-timer [Index:5] remaining seconds: O
BGP nexthop(s):
Total number of IPV4 nexthops : O
Total number of IPV6 nexthops : O
```

show bgp nexthop-tree-details

Displays Border Gateway Protocol (BGP) next-hop tree information.

Syntax

```
show bgp nexthop-tree-details
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP next-hop tree information:

```
Switch> show bgp nexthop-tree-details
```

show bgp paths

Displays all the Border Gateway Protocol (BGP) paths stored in the database.

Syntax

show bgp [{ipv4|ipv6} unicast] paths

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP path information:

```
Switch> show bgp paths
```

show bgp policy

Displays Border Gateway Protocol (BGP) policy statistics.

Syntax

```
show bgp {ipv4|ipv6} unicast policy statistics redistribute
{all|direct|static} [vrf {all|default}]
```

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
all	Displays BGP policy statistics for all redistributed routes.
direct	Displays BGP policy statistics for direct redistributed routes.
static	Displays BGP policy statistics for static redistributed routes.
vrf all	Displays BGP policy statistics associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP policy statistics associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP policy statistics for all redistributed routes:

```
Switch> show bgp ipv4 unicast policy statistics redistribute all
```

show bgp prefix-list

Displays Border Gateway Protocol (BGP) routes matching the specified prefix list.

Syntax

show bgp prefix-list *<prefix list name>*

where:

Parameter	Function
prefix list name	The name of the prefix list used to filter BGP routes.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the prefix list 'preflist1':

```
Switch> show bgp prefix-list preflist1
```

show bgp process

Displays Border Gateway Protocol (BGP) process information.

Syntax

show bgp process

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP process information:

```
Switch> show bgp process

BGP Process Information
BGP Process ID             : 2202
BGP Protocol Tag           : 23
BGP Protocol State         : Running

BGP attributes information
BGP AS path entries        : 0

Information regarding configured VRFs:

BGP Information for VRF default
VRF Id                     : 0
VRF state                  : UP
Router-ID                  : 10.241.41.21
Configured Router-ID       : 10.241.41.21
...
```

show bgp quote-regexp

Displays Border Gateway Protocol (BGP) routes matching the autonomous system (AS) path regular expression.

Syntax

`show bgp [{ipv4|ipv6} unicast] quote-regexp` *<regular expression>*

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
regular expression	The regular expression to match the AS path.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the AS path regular expression "65550":

```
Switch> show bgp quote-regexp "65550"
```

show bgp regexp

Displays Border Gateway Protocol (BGP) routes matching the autonomous system (AS) path regular expression.

Syntax

show bgp regexp *<regular expression>*

where:

Parameter	Function
regular expression	The regular expression to match the AS path.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the AS path regular expression "172":

```
Switch> show bgp regexp 172
```

show bgp route-map

Displays Border Gateway Protocol (BGP) route maps.

Syntax

show bgp [{ipv4|ipv6} unicast] route-map *<route map name>*

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
route map name	The name of the route map.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP route map 'path-34':

```
Switch> show bgp route-map path-34
```

show bgp sessions

Displays Border Gateway Protocol (BGP) session information for all BGP peers.

Syntax

show bgp sessions [vrf {all|default}]

where:

Parameter	Function
vrf all	Displays BGP session information for peers associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP session information only for peers associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP session information:

```
Switch> show bgp sessions
```

show bgp statistics

Displays Border Gateway Protocol (BGP) traffic statistics.

Syntax

show bgp statistics

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP traffic statistics:

```
Switch> show bgp statistics
```

show bgp vrf

Displays Border Gateway Protocol (BGP) information for the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

`show bgp [{ipv4|ipv6} unicast] vrf {all|default}`

where:

Parameter	Function
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
all	Displays BGP information for all the VRF instances.
default	Displays BGP information for the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP information for all VRF instances:

```
Switch> show bgp vrf all
```

show boot

Displays the contents of the BOOT variable, including the versions of the active and standby images, the configured boot image, the scheduled reboot time, and the currently configured hardware profile for the switch ports.

Syntax

`show boot [portmode]`

where:

Parameter	Function
`portmode`	Displays only the current portmode settings.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.
10.2	The ZTP mode output was added.
10.4	The command was updated to support the NE10032 and NE2572.

Example

The following command displays the contents of the BOOT variable:

```
Switch# show boot

Current FLASH software:
  active image: version 10.6.1.0 downloaded 20:49:43 UTC Sat May 20 2000
  standby image: version unknown, downloaded unknown
  Uboot: version 10.6.1.0, downloaded 20:49:47 UTC Sat May 20 2000
  ONIE: empty
Currently set to boot software active image
Current port mode: default mode
Next boot port mode: default mode

Currently scheduled reboot time: Thu Oct 26 15:00:00 2017
```

For a switch running in ZTP mode, the output of this command is the following:

```
Switch# show boot

Current ZTP State: Enable
Current FLASH software:
  active image: version 10.7.2.0, downloaded 18:39:47 UTC Wed Sep 16 2015
  standby image: version 10.7.2.0, downloaded 18:44:40 UTC Wed Sep 16
2015
  Uboot: version 10.7.2.0, downloaded 17:49:51 UTC Thu Jul 30 2015
Currently set to boot software active image
Currently scheduled reboot time: none
Current port mode: default mod
```

For the NE10032 and NE2572, the output of this command displays additional information, such as BIOS, Grub, and ONIE versions, and the status of the secure boot feature:

```
Switch# show boot

Current ZTP State: Enable
Current FLASH software:
  active image: version 10.7.2.0, downloaded 13:47:03 UTC Fri May 12 2017
  standby image: version 10.7.2.0, downloaded 10:28:35 UTC Fri May 12
2017
  Grub: version 10.7.2.0, downloaded 13:47:04 UTC Fri May 12 2017
  BIOS: version ALPHA.5.33.0206B, release date 05/10/2017
  Secure Boot: Disabled
  ONIE: version unknown, downloaded unknown
Currently set to boot software active image
Current port mode:
        Port Ethernet1/30 is set in 40G mode
```

show switchport interfaces brief

Displays a short summary of all layer 2 interfaces.

Syntax

show switchport interfaces brief

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a short summary of layer 2 interfaces:

```
Switch# show switchport interfaces brief
Flags:
S - Static port-channel    P - LACP port-channel
-------------------------------------------------------------------------------
Ethernet        VLAN  Type      Mode      Status  Reason        Speed  Port
Interface                                                              Agg#
-------------------------------------------------------------------------------
Ethernet1/1     10    Ethernet  trunk     up      none          10000  1000
(P)
Ethernet1/2     10    Ethernet  trunk     up      none          10000  1000
(P)
Ethernet1/3     1     Ethernet  access    down    Protocol down 10000  --
Ethernet1/4     1     Ethernet  access    down    Protocol down 10000  --
Ethernet1/5     1     Ethernet  access    down    Protocol down 10000  --
Ethernet1/6     1     Ethernet  access    down    Protocol down 10000  --
Ethernet1/7     1     Ethernet  access    down    Protocol down 10000  --
Ethernet1/8     1     Ethernet  access    down    Protocol down 10000  --
Ethernet1/9     10    Ethernet  trunk     up      none          10000  2000
```

show cee

Displays Converged Enhanced Ethernet (CEE) information.

Syntax

show cee [interface ethernet *<chassis number/port number>* **[dcbx**
{admin-details|ctrl|operational-details|remote-details}]]

where:

Parameter	Description
interface ethernet	Displays ETS/PFC information for the specified ethernet port.
chassis number/port number	The *chassis number* is 1 and the *port number* depends on the switch type.
dcbx admin-details	Displays DCBX administrative details for the specified ethernet port.
dcbx ctrl	Displays DCBX control state machine information for the specified ethernet port.
dcbx operational-details	Displays DCBX operational details for the specified ethernet port.
dcbx remote-details	Displays DCBX remote details for the specified ethernet port.

Modes

User EXEC Mode

History

Release	Modification
10.3	The command was introduced.

Restrictions

This command is not supported on the NE1032T and the NE1072T.

Example

The following command displays CEE information:

```
Switch> show cee

CEE feature setting: On

ETS information:
ETS Global Admin Configuration:
PGID    BW%    COSq  Priorities           Description
===========================================================================
0       10     0      0 1 2
1       0      NA
2       40     2      4 5 6 7
3       50     3      3
4       0      4
5       0      5
6       0      6
7       0      7
15      NA     1

ETS Global Operational Configuration:
PGID    BW%    COSq  Priorities           Description
===========================================================================
0       10     0      0 1 2
1       0      NA
2       40     2      4 5 6 7
3       50     3      3
4       0      4
5       0      5
6       0      6
7       0      7
15      NA     1

ETS Interface Admin Configuration
--------------------
ETS Willing mode is not supported on the Switch.

Interface          Advertise
===========================================================================
Ethernet1/1        On
Ethernet1/2        On
Ethernet1/3        On
Ethernet1/4        On
Ethernet1/5        On
Ethernet1/6        On
...
```

The following command displays DCBX administrative details for ethernet port 1/12:

```
Switch> show cee interface ethernet 1/12 dcbx admin-details

Current DCBX Administrative configuration on Interface : Ethernet1/12

PFC administrative details
=========================
State Advertise Willing   Cap   Priorities  Syncd
----- --------- --------- ----- ----------- -----
On    On        Off       2     3           On

ETS administrative details
=========================
State Advertise Willing   PGID     BW%      Priorities  Syncd
----- --------- --------- -------- -------- ----------- -----
On    On        Off       0        10       0 1 2       on
On    On        Off       1        0                    on
On    On        Off       2        40       4 5 6 7     on
On    On        Off       3        50       3           on
On    On        Off       4        0                    on
On    On        Off       5        0                    on
On    On        Off       6        0                    on
On    On        Off       7        0                    on

Application priority administrative details
==========================================
State Advertise Willing   Protocol ProtoID       Priorities
----- --------- --------- -------- -----------   ----------
On    On        Off
```

The following command displays DCBX control state machine information for ethernet port 1/12:

```
Switch> show cee interface ethernet 1/12 dcbx ctrl

Interface : Ethernet1/12
DCBX Admin-state: Enabled
DCBX Version: DCBX IEEE 802.1Qaz (v2.5)
```

The following command displays CEE information for ethernet port 1/12:

```
Switch> show cee interface ethernet 1/12

ETS information for the interface Ethernet1/12:
ETS Global Admin Configuration:
PGID    BW%    COSq  Priorities          Description
========================================================================
0       10     0      0 1 2
1       0      NA
2       40     2      4 5 6 7
3       50     3      3
4       0      4
5       0      5
6       0      6
7       0      7
15      NA     1

ETS Global Operational Configuration:
PGID    BW%    COSq  Priorities          Description
========================================================================
0       10     0      0 1 2
1       0      NA
2       40     2      4 5 6 7
3       50     3      3
4       0      4
5       0      5
6       0      6
7       0      7
15      NA     1

Admin Configuration
--------------------
Advertise Willing
========================================================================
On       Off

Operational Configuration
--------------------
Advertise Willing
========================================================================
Off      Off

PFC information for the interface Ethernet1/12:
Admin Configuration
--------------------
Interface     State  Advertise Cap   Priorities
========================================================================
Ethernet1/12  On     On        2     3

------------------------------------------------------------------------

Operational Configuration
------------------------
State Cap   Priorities
========================================================================
On    2     3
```

show cee app-proto

Displays the Data Center Bridging eXchange Capability (DCBX) application control configuration.

Syntax

`show cee app-proto`

Modes

User EXEC Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays DCBX application control configuration:

```
Switch> show cee app-proto

Admin Configuration:
Applicatoin Protocol Willing mode is not supported on the Switch.

Advertise   Protocol    ProtoId   Priorities          ConfigName
========================================================================
On          UDP         RoCEv2    3                   rocev2
```

Restrictions

This command is not supported on the NE1032T and the NE1072T.

show cee ets

Displays Enhanced Transmission Selection (ETS) information.

Syntax

show cee ets [information|priority-group *<priority group ID>***]**

where:

Parameter	Description
information	Displays ETS information.
priority	Displays priority group information.
priority group ID	The priority group ID (an integer between 0 and 7, or 15).

Modes

User EXEC Mode

History

Release	Modification
10.3	The command was introduced.

Restrictions

This command is not supported on the NE1032T and the NE1072T.

Example

The following command displays ETS information:

```
Switch> show cee ets

ETS Global Admin Configuration:
PGID    BW%   COSq  Priorities          Description
========================================================================
0       10    0      0 1 2
1       0     NA
2       40    2      4 5 6 7
3       50    3      3
4       0     4
5       0     5
6       0     6
7       0     7
15      NA    1

ETS Global Operational Configuration:
-------------------
ETS Config is not Operational as CEE state is Off

ETS Interface Admin Configuration
-------------------
ETS Willing mode is not supported on the Switch.

Interface          Advertise
========================================================================
Ethernet1/1        On
Ethernet1/2        On
Ethernet1/3        On
Ethernet1/4        On
...
```

The following command displays information for priority group 3:

```
Switch> show cee ets priority-group 3

Current Priority Group Configuration

PGID    BW%   COSq   Priorities
========================================================================
2       40    2       4 5 6 7
```

show cee pfc

Displays Priority Flow Control (PFC) information.

Syntax

show cee pfc [interface ethernet *<chassis number/port number>***]**

where:

Parameter	Description
interface ethernet	Displays PFC information for the specified ethernet port.
chassis number/port number	The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

User EXEC Mode

History

Release	Modification
10.3	The command was introduced.

Restrictions

This command is not supported on the NE1032T and the NE1072T.

Example

The following command displays PFC information:

```
Switch> show cee pfc

Global Admin PFC State: On
Priority  State  Description
===============================
   0      Dis
   1      Ena
   2      Dis
   3      Ena    PFC_priority_3
   4      Dis
   5      Dis
   6      Dis
   7      Dis
Admin Configuration:
-------------------
PFC Willing mode is not supported on the Switch.

Interface      State  Advertise Cap   Priorities
======================================================================
Ethernet1/1    On     On        2     1 3
Ethernet1/2    On     On        2     1 3
Ethernet1/3    On     On        2     1 3
Ethernet1/4    On     On        2     1 3
...
Ethernet1/54   On     On        2     1 3

--------------------------------------------------------------------------

Operational Configuration
------------------------
PFC Config is not Operational as CEE state is Off
```

The following command displays PFC information for ethernet port 1/12:

```
Switch> show cee pfc interface ethernet 1/12

Admin Configuration
-------------------
Interface      State  Advertise Cap   Priorities
======================================================================
Ethernet1/12   On     On        2     1 3

--------------------------------------------------------------------------

Operational Configuration
------------------------
PFC Config is not Operational as CEE state is Off
```

show cee pfc counters

Displays Priority Flow Control (PFC) statistics.

Syntax

`show cee pfc counters [interface ethernet` *<chassis number/port number>***`]`**

where:

Parameter	Description
`interface ethernet`	Displays PFC statistics for the specified ethernet port.
chassis number/port number	The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

User EXEC Mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays PFC statistics:

```
Switch> show cee pfc counters
```

The following command displays PFC statistics for ethernet port 1/12:

```
Switch> show cee pfc counters interface ethernet 1/12
```

Restrictions

● This command is not supported on the NE1032T and the NE1072T.

● This command cannot show PFC statistics for a range of ethernet interfaces. It displays PFC statistics for all switch ports or for a specific port.

show class-map

Displays the specified class maps.

Syntax

show class-map [<*class map name*>**]**

where:

Parameter	Function
class map name	The name of the class map.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays class maps:

```
Switch> show class-map

  Type qos class-maps
  ===================
      class-map type qos match-any class-default


  Type queuing class-maps
  =======================
      class-map type queuing match-any 1p7q1t-out-q4

      class-map type queuing match-any 1p7q1t-out-q2

      class-map type queuing match-any 1p7q1t-out-pq1
         match cos 5-7

      class-map type queuing match-any 1p7q1t-out-q-default
         match qos-group 0-7
         match cos 0-4

      class-map type queuing match-any 1p7q1t-out-q3

      class-map type queuing match-any 1p7q1t-out-q6
...
```

show class-map type

Displays class maps of the specified type.

Syntax

show class-map type {control-plane|qos|queuing} [<*class map name*>**]**

where:

Parameter	Function
control-plane	Displays Control Plane Protection (CoPP) class maps.
qos	Displays Quality of Service (QoS) class maps.
queuing	Displays Class of Service queue (COSq) class maps.
class map name	The name of the class map.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays CoPP class maps:

```
Switch> show class-map type control-plane

  Type control plane class-maps
  ============================
      class-map match-any copp-s-lacp

      class-map match-any copp-s-default

      class-map match-any copp-s-bfd

      class-map match-any copp-s-arpresponse

      class-map match-any copp-s-arprequest
...
```

show cli

Displays the Command Line Interface (CLI) tree for the current command mode.

Syntax

show cli [history|list {all|cur} [number]]

where:

Parameter	Function
history	Displays the session command history.
list all	Displays all the CLI commands available in all command modes.
list cur	Displays only the CLI commands available in the current command mode.
number	Displays only the number of CLI commands.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.
10.4	Added **list** option.

Example

The following command displays the CLI tree:

```
Switch> show cli

Exec mode:
+-clear
  +-aaa
    +-local
      +-user
        +-lockout
          +-username
            +-USERNAME [remove aaa local user lockout username USERNAME]
  +-access-list
    +-counters [remove access-list counters (WORD|)]
      +-WORD [remove access-list counters (WORD|)]
  +-arp
    +-access-list
      +-counters [remove arp access-list counters(WORD|)]
        +-WORD [remove arp access-list counters(WORD|)]
```

The following command displays the session command history:

```
Switch> show cli history

   1 enable
   2 configure terminal
   3 vlan 13O
   4 name VLAN-SEC
   5 show vlan
   6 exit
   7 disable
   8 show cli history
```

The following command displays the CLI commands available only in Interface Configuration mode:

```
Switch(config-if)# show cli list cur

MODE_16--Interface configuration mode:
channel-group <1-4096> mode (active|on|passive)
alias WORD LINE
auto-policy enable
bfd (ipv4|ipv6|) authentication       (simple | keyed-md5 |
meticulous-keyed-md5 | keyed-sha1 | meticulous-keyed-sha1)       (key-id
<O-255> key WORD | key-chain WORD)
bfd (ipv4|ipv6|) echo
bfd (ipv4|ipv6|) interval <50-999> minrx <50-999> multiplier <3-50>
bfd (ipv4|ipv6)
bfd neighbor src-ip A.B.C.D dest-ip A.B.C.D (multihop|) (non-persistent|)
(admin-down|)
bfd neighbor src-ip X:X::X:X dest-ip X:X::X:X (multihop|)
(non-persistent|) (admin-down|)
switchport
...
```

The following command displays the number of CLI commands available in Interface Configuration mode:

```
Switch(config-if)# show cli list cur number

MODE_16--Interface configuration mode:
        commands number: 381
```

Restrictions

The following command is available only in User EXEC and Privileged EXEC modes:

● **show cli history**

show clock

Displays the current switch time and date.

Syntax

show clock

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the current switch time:

```
Switch> show clock
07:29:25 PM UTC Sun Dec 27 2015
```

show cores

Displays the process core dumps of the switch.

Syntax

show cores

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the process core dumps:

```
Switch# show cores

Process Name   PID        Datetime
------------   --------   ------------------
bgpd           gz         2015-09-10 17:05:26
hostmibd       gz         2015-09-10 17:05:31
l2mribd        gz         2015-09-10 17:05:28
lacpd          gz         2015-09-10 17:05:28
mstpd          gz         2015-09-10 17:05:28
nsm            gz         2015-09-10 17:04:18
ospfd          gz         2015-09-10 17:05:28
ribd           gz         2015-09-10 17:05:28
vrrpd          gz         2015-09-10 17:05:28
```

show current

Displays the Multiple Spanning Tree (MST) configuration currently in use.

Syntax

show current

Modes

MST Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the currently used MST configuration:

```
Switch(config-mst)# show current
Current MST Configuration
Name    []
Revision O Instances configured O
Instance  Vlans mapped
--------
-------------------------------------------------------------------------
O       1-4094
--------------------------------------------------------------------------
------
Mars1(config-mst)#sho pending
Pending MST Configuration
Name    [region]
Revision 65535 Instances configured 3
Instance  Vlans mapped
--------
-------------------------------------------------------------------------
O       4-4094
1       1
2       2
3       3
-------------------------------------------------------------------------
```

show debug

Displays the current debug settings.

Syntax

```
show debug [aaa|bfd|bgp|buffer{all|<facility name>}|console|hsl|ip
{arp|igmp snooping|ospf}|ipv6
nd|lacp|lldp|logfile|monitor|npa|nsm|ntp|pki|radius|rib|slp|sn
mp|snmp-server|spanning-tree|ssh-server|syslog|status|tacacs+|
teaming|telemetry|telnet-server|vlag|vlan|vrrp-engine]
```

where:

Parameter	Function
aaa	Displays the current Authentication, Authorization and Accounting (AAA) debug settings.
bfd	Displays the current Bidirectional Forwarding Detection (BFD) debug settings.
bgp	Displays the current Border Gateway Protocol (BGP) debug settings.
buffer	Displays content of the debug tracing buffer for a given facility or for all facilities.
console	Displays debug trace configuration associated to redirection to the console.
hsl	Displays the current Hardware Specific Layer (HSL) debug settings.
ip arp	Displays the current Internet Protocol (IP) Address Resolution Protocol (ARP) debug settings.
ip igmp snooping	Displays the current Internet Group Management Protocol (IGMP) Snooping debug settings.
ip ospf	Displays the current Open Shortest Path First (OSPF) debug settings.
ipv6 nd	Displays the current Internet Protocol version 6 (IPv6) Neighbor Discovery (ND) debug settings.
lacp	Displays the current Link Aggregation Control Protocol (LACP) debug settings.
lldp	Displays the current Link Layer Discovery Protocol (LLDP) debug settings.
logfile	Displays debug trace configuration associated to redirection to a log file.
monitor	Displays debug trace configuration associated to redirection to the SSH/Telnet monitor.

Parameter	Function
npa	Displays the current Network Policy Agent (NPA) debug settings.
nsm	Displays the current Network Service Module (NSM) debug settings.
ntp	Displays the current Network Time Protocol (NTP) debug settings.
pki	Displays the current Public Key Infratructure (PKI) debug settings.
radius	Displays the current Remote Authentication Dial-In User Service (RADIUS) debug settings.
rib	Displays the current Routing Information Base (RIB) debug settings.
slp	Displays the current Service Location Protocol (SLP) debug settings.
snmp	Displays the current Simple Network Management Protocol (SNMP) debug settings.
snmp-server	Displays the current Simple Network Management Protocol (SNMP) agent debug settings.
spanning-tree	Displays the current spanning tree debug settings.
ssh-server	Displays the current Secure Shell (SSH) server debug settings.
syslog	Displays the current system log debug settings.
status	Displays the debug trace status.
tacacs+	Displays the current Terminal Access Controller Access-Control System Plus (TACACS+) debug settings.
teaming	Displays the current teaming debug settings.
telemetry	Displays the current Telemetry service debug settings.
telnet-server	Displays the current Telnet server debug settings.
vlag	Displays the current Virtual Link Aggregation (VLAG) debug settings.
vlan	Displays the current Virtual LAN (VLAN) debug settings.
vrrp-engine	Displays the current Virtual Router Redundancy Protocol (VRRP) engine debug settings.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **status, buffer, logfile, monitor, console, teaming** options.

Example

The following command displays the current debug settings for LACP:

```
Switch> show debug lacp

LACP debugging status:
 LACP cli debugging is off
 LACP sync debugging is off
 LACP error debugging is off
 LACP timer debugging is off
 LACP event debugging is off
 LACP trace debugging is off
 LACP individual debugging is off
 LACP packet(rx) debugging is off
 LACP packet(tx) debugging is off
 LACP message(recv) debugging is off
 LACP message(send) debugging is off
 LACP debugging on interface: all
```

show debug os

Displays operating system (OS) information.

Syntax

```
show debug os {arp|arpv6|interface|route|routev6} vrf
{default|management}
```

where:

Parameter	Description
`arp`	Displays Address Resolution Protocol (ARP) IPv4 table entries.
`arpv6`	Displays Address Resolution Protocol (ARP) IPv6 table entries.
`interface`	Displays interface information.
`route`	Displays IPv4 routing table.
`routev6`	show IPv6 routing table.
`vrf default`	Displays OS information for the default Virtual Routing and Forwarding (VRF) instance.
`vrf management`	Displays OS information for the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays interface information for the management VRF instance:

```
Switch> show debug os interface vrf management

eth0    Link encap:Ethernet  HWaddr a8:97:dc:de:3f:00
        inet addr:10.241.39.183  Bcast:10.241.39.255  Mask:255.255.255.128
        UP BROADCAST RUNNING ALLMULTI MULTICAST  MTU:1500  Metric:1
        RX packets:290374 errors:0 dropped:0 overruns:0 frame:0
        TX packets:16477 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:71517603 (68.2 MiB)  TX bytes:1851745 (1.7 MiB)
        Base address:0xa000

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:756149 errors:0 dropped:0 overruns:0 frame:0
        TX packets:756149 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:0
        RX bytes:51383256 (49.0 MiB)  TX bytes:51383256 (49.0 MiB)
```

show dot1q-tunnel

Displays current PVID Ingress Tagging settings.

Syntax

show dot1q-tunnel [interface {ethernet *<chassis number>***/***<port number>***|port-channel** *<LAG number>***}]**

where:

Parameter	Function
interface	Displays current PVID Ingress Tagging parameters for the specified interface.
ethernet *chassis number***/***port number*	Displays current PVID Ingress Tagging parameters for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Displays current PVID Ingress Tagging parameters for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays PVID Ingress Tagging statistics:

```
Switch> show dot1q-tunnel interface ethernet 1/9
```

show env

Displays hardware environment status information.

Syntax

show env {fan [detail]|power [input]|temperature}

where:

Parameter	Function
fan	Displays fan environment information.
detail	Displays fan environment detailed information.
power	Displays power environment information.
input	Displays power input environment information.
temperature	Displays temperature environment information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays fan environment detailed information:

```
Switch> show env fan detail

Total Fan: 8
+--------+-----+----------------+--------------+-------+--------+
| Module | Fan | Name           | Air-Flow     | Speed | Speed  |
| Number | ID  |                | Direction    | (%)   | (RPM)  |
+--------+-----+----------------+--------------+-------+--------+
  01       01    Fan 1            Front-to-Back  0       4035
  01       02    Fan 2            Front-to-Back  25      4295
  02       03    Fan 3            Front-to-Back  0       4017
  02       04    Fan 4            Front-to-Back  26      4337
  03       05    Fan 5            Front-to-Back  0       4251
  03       06    Fan 6            Front-to-Back  24      4386
  04       07    Fan 7            Front-to-Back  0       4313
  04       08    Fan 8            Front-to-Back  25      4455
```

The following command displays power environment information:

```
Switch> show env power

Total Power Supplies: 2
+----+----------------+----------------+----------------+-------------+
| ID | Name           | Manufacturer   | Model          | State       |
+----+----------------+----------------+----------------+-------------+
  01   Power Supply 1                                     Normal ON
  02   Power Supply 2                                     Alert Fault
```

The following command displays temperature environment information:

```
Switch> show env temperature

+----+-----------------+----------+--------+
| ID | Name            | Temp     | State  |
|    |                 | (Celsius)|        |
+----+-----------------+----------+--------+
  01   CPU Local          38         OK
  02   Ambient            41         OK
  03   Hot Spot           57         OK
```

show errdisable recovery

Displays error disable recovery information.

Syntax

```
show errdisable recovery
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays error disable recovery information:

```
Switch> show errdisable recovery
Global ErrDisable recovery enabled, timeout 45 sec

--------------------------------------------------
Interface       Errdisable reason   Time left(sec)
--------------------------------------------------
Ethernet1/48    bpduguard           40
```

show hardware internal

Displays Peripheral Component Interconnect (PCI) configuration space hardware information.

Syntax

show hardware internal [pci]

where:

Parameter	Function
pci	Displays PCI configuration space for the device.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays PCI information:

```
Switch> show hardware internal

PCI Config Space for Device: O
0000000 5719 7100 0601 1000 2100 200b 0800 0100
0000010 0000 f0df 0000 0000 0001 0100 0000 0000
0000020 00e0 f0ff f1ff 0100 0000 0000 0000 0000
0000030 0000 0000 4400 0000 0000 0000 0000 0000

PCI Config Space for Device: 1
0000000 e414 54b8 0600 1000 0300 0002 0800 0000
0000010 0400 00e0 0000 0000 0000 0000 0000 0000
0000020 0000 0000 0000 0000 0000 0000 e414 54b8
0000030 0000 0000 4800 0000 0000 0000 0001 0000
```

show hardware internal buffer

Displays buffer information.

Syntax

`show hardware internal buffer info {egress|ingress}`

where:

Parameter	Function
egress	Displays egress information for each switch port.
ingress	Displays ingress information for each switch port.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays ingress buffer information:

```
Switch> show hardware internal buffer info ingress

-------------------------------------------------------
Instant ingress buffer utilization in terms of cells
One cell represents approximately 208 bytes

---------------+-----------------------+------------
 Ethernet Port |  Ingress Buffer Usage |  XOFF
---------------+-----------------------+------------
 Ethernet1/1   |                     0 |
 Ethernet1/2   |                     0 |
 Ethernet1/3   |                     0 |
 Ethernet1/4   |                     0 |
 Ethernet1/5   |                     0 |
 Ethernet1/6   |                     0 |
 Ethernet1/7   |                     0 |
 Ethernet1/8   |                     0 |
 Ethernet1/9   |                     0 |
 Ethernet1/10  |                     0 |
 Ethernet1/11  |                     0 |
 Ethernet1/12  |                     0 |
...
```

show hardware internal cpu-mac

Displays hardware MAC information.

Syntax

show hardware internal cpu-mac [inband|mgmt] stats

where:

Parameter	Function
inband	Displays inband port related information.
mgmt	Displays management port related information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays inband port related information:

```
Switch> show hardware internal cpu-mac inband stats

mgmt0      Link encap:Management Ethernet        inet
addr:10.241.41.21/25 Bca
st:10.241.41.127
        inet6 addr:fe80::aa97:dcff:fede:2500/64
        UP BROADCAST RUNNING ALLMULTI MULTICAST MTU:1500  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:0 dropped:0 carrier:0
        collisions:0
        RX bytes:0  TX bytes:0
```

Restrictions

The following command is available only in User EXEC and Privileged EXEC modes:

● **show hardware internal cpu-mac inband stats**

The following command is not available in User EXEC mode:

● **show hardware internal cpu-mac mgmt stats**

show hostname

Displays the switch's network name.

Syntax

```
show hostname
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the switch's network name:

```
Switch> show hostname

Switch
```

show hosts

Displays Domain Name Service (DNS) information.

Syntax

```
show hosts vrf {all|default|management}
```

where:

Parameter	Description
`all`	Displays DNS information for all Virtual Routing and Forwarding (VRF) instances.
`default`	Displays DNS information for the default VRF instance.
`management`	Displays DNS information for the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays DNS information for all VRF instances:

```
Switch> show hosts vrf all
```

show interface

Displays interface status and configuration information.

Syntax

```
show interface [<interface name>] [brief|capabilities|
|description|flowcontrol|hybrid[vlan <vlan
list>]|mac-address|snmp-ifindex|switchport|transceiver]
```

where:

Parameter	Function
interface name	The name of the interface.
brief	Displays a short interface configuration summary.
capabilities	Displays interface capabilities (speed, duplex etc.).
description	Displays interface description.
flowcontrol	Displays interface IEEE 802.3x flow control status.
hybrid	Displays interface hybrid information.
mac-address	Displays interface MAC address.
snmp-ifindex	Displays Simple Network Management Protocol (SNMP) interface index (ifindex).
switchport	Displays interface bridging configuration.
transceiver	Displays interface transceiver information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **hybrid** option.

Example

The following command displays a short summary of the interface configuration:

```
Switch> show interface brief

--------------------------------------------------------------------------
Ethernet      VLAN   Type Mode    Status Reason              Speed   Port
Interface                                                            Agg#
--------------------------------------------------------------------------
Ethernet1/1   10     eth  trunk   up     none                10000   1000
Ethernet1/2   10     eth  trunk   up     none                10000   1000
Ethernet1/3   1      eth  access  down   Link not connected  auto    --
Ethernet1/4   1      eth  access  down   Link not connected  auto    --
Ethernet1/5   1      eth  access  down   Link not connected  auto    --
Ethernet1/6   1      eth  access  down   Link not connected  auto    --
Ethernet1/7   1      eth  access  down   Link not connected  auto    --
Ethernet1/8   1      eth  access  down   Link not connected  auto    --
Ethernet1/9   10     eth  trunk   up     none                10000   2000
Ethernet1/10  10     eth  trunk   up     none                10000   2000
...
```

The following command displays interface flow control status:

```
Switch> show interface flow control

Port          Send FlowControl  Receive FlowControl  RxPause TxPause
              admin   oper       admin   oper
------------  ------- --------   ------- -----------  ------- -------
Ethernet1/1   off     off        on      on                0       0
Ethernet1/2   off     off        on      on                0       0
Ethernet1/3   off     off        on      on                0       0
Ethernet1/4   off     off        on      on                0       0
Ethernet1/5   off     off        on      on                0       0
Ethernet1/6   off     off        on      on                0       0
Ethernet1/7   off     off        on      on                0       0
Ethernet1/8   off     off        on      on                0       0
Ethernet1/9   off     off        on      on                0       0
Ethernet1/10  off     off        on      on                0       0
...
```

The following command displays interface MAC address:

```
Switch> show interface mac-address
--------------------------------------------------------------------------
Interface              Mac-Address     Burn-in Mac-Address
--------------------------------------------------------------------------
Ethernet1/1            a48c.db95.5702  a48c.db95.5702
Ethernet1/2            a48c.db95.5703  a48c.db95.5703
Ethernet1/3            a48c.db95.5704  a48c.db95.5704
Ethernet1/4            a48c.db95.5705  a48c.db95.5705
Ethernet1/5            a48c.db95.5706  a48c.db95.5706
Ethernet1/6            a48c.db95.5707  a48c.db95.5707
Ethernet1/7            a48c.db95.5708  a48c.db95.5708
Ethernet1/8            a48c.db95.5709  a48c.db95.5709
Ethernet1/9            a48c.db95.570a  a48c.db95.570a
Ethernet1/10           a48c.db95.570b  a48c.db95.570b
...
```

The following command displays interface hybrid information:

```
Switch> show interface hybrid
----------------------------------------------------------------------------
---
Port            Native         Status     Port      Tagged/
                Vlan                      Agg       Untagged
----------------------------------------------------------------------------
---
Ethernet1/1     1              hybrid     --        u
Ethernet1/10    1              hybrid     --        u


----------------------------------------------------------------------------
---
Port            Allowed VLANs            Tagged VLANs
----------------------------------------------------------------------------
---
Ethernet1/1     10,12-100                --
Ethernet1/10    All                      --




-----------------------------------------------------------------
Port            STP Forwarding
-----------------------------------------------------------------
```

show hsc ovsdb connection

Displays Open Switch Virtual Database (OVSDB) connection information.

Syntax

```
show hsc ovsdb connection
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays OVSDB connection information:

```
Switch(config)# show hsc ovsdb connection
```

show hsc restc connection

Displays Representational State Transfer (REST) client connection information.

Syntax

`show hsc restc connection`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays REST client connection information:

```
Switch(config)# show hsc restc connection
```

show hsc vtep

Displays VTEP information.

Syntax

```
show hsc vtep
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays VTEP information:

```
Switch(config)# show hsc vtep
```

show hsc vtep mac-address

Displays VTEP MAC forwarding table information.

Syntax

```
show hsc vtep mac-address [mcast-local|mcast-remote|
ucast-local|ucast-remote]
```

where:

Parameter	Function
mcast-local	(Optional) show local multicast MAC address
mcast-remote	(Optional) show remote multicast MAC address
ucast-local	(Optional) show local unicast MAC address
ucast-remote	(Optional) show remote unicast MAC address

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays the local multicast VTEP MAC address:

```
Switch(config)# show hsc vtep mac-address mcast-local
```

show hsc vtep tunnels

Displays VTEP tunnels.

Syntax

```
show hsc vtep tunnels
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays VTEP tunnels:

```
Switch(config)# show hsc vtep tunnels
```

show hsc vtep virtual-network

Displays VTEP logical network information.

Syntax

```
show hsc vtep virtual-network [vnid <Virtual Network ID>]
```

where:

Parameter	Function
Virtual Network ID	(Optional) The VTEP Network ID; an integer from 1-16777214.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays VTEP logical network information:

```
Switch(config)# show hsc vtep virtual-network
```

show hsc vtep virtual-port

Displays VTEP virtual port information.

Syntax

`show hsc vtep virtual-port`

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays VTEP virtual port information:

```
Switch(config)# show hsc vtep virtual-port
```

show interface ethernet

Displays ethernet interface configuration information.

Syntax

show interface ethernet *<chassis number or range/port number or range>*
[brief|capabilities|description|flowcontrol|mac-address|
switchport|transceiver]

where:

Parameter	Function
chassis number or range/port number or range	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* depends on the switch type.
`brief`	Displays a short interface configuration summary.
`capabilities`	Displays interface capabilities (speed, duplex etc.).
`description`	Displays interface description.
`flowcontrol`	Displays interface IEEE 802.3x flow control status.
`mac-address`	Displays interface MAC address.
`switchport`	Displays interface bridging configuration.
`transceiver`	Displays interface transceiver information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays configuration information for ethernet interface 1/12:

```
Switch> show interface ethernet 1/12

Interface Ethernet1/12
  Hardware is Ethernet  Current HW addr: a897.dcde.250e
  Physical:a897.dcde.250e  Logical:(not set)
  index 410120 metric 1 MTU 1500 Bandwidth 10000000 Kbit
  Port Mode is access
  <BROADCAST,MULTICAST>
  VRF Binding: Not bound
  Speed 10000 Mb/s Duplex full
  Last link flapped never
  Last clearing of "show interface" counters never
  30 seconds input rate 0 bits/sec, 0 bytes/sec, 0 packets/sec
  30 seconds output rate 0 bits/sec, 0 bytes/sec, 0 packets/sec
  Load-Interval #2: 5 minute (300 seconds)
     input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
  RX
    0 unicast packets  0 multicast packets  0 broadcast packets
    0 input packets  0 bytes
    0 jumbo packets  0 storm suppression packets
    0 giants  0 input error  0 short frame  0 overrun  0 underrun
    0 watchdog  0 if down drop
    0 input with dribble  0 input discard(includes ACL drops)
    0 Rx pause
  TX
    0 unicast packets  0 multicast packets  0 broadcast packets
    0 output packets  0 bytes
    0 jumbo packets
    0 output errors  0 collision  0 deferred  0 late collision
    0 lost carrier  0 no carrier  0 babble
    0 Tx pause
  0 interface resets
Automatic policy provisioning is disabled on this interface
```

show interface loopback

Displays loopback interface configuration information.

Syntax

show interface loopback *<loopback interface>* **[brief|capabilities| description|flowcontrol|mac-address|transceiver]**

where:

Parameter	Function
loopback interface	The loopback interface number. Range is from 0 to 7.
brief	Displays a short interface configuration summary.
capabilities	Displays interface capabilities (speed, duplex etc.).
description	Displays interface description.
flowcontrol	Displays interface IEEE 802.3x flow control status.
mac-address	Displays interface MAC address.
transceiver	Displays interface transceiver information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays configuration information for loopback interface 0:

```
Switch> show interface loopback 0

Interface loopback0
  Hardware is Loopback
  index 8 metric 1 MTU 1500 Bandwidth 0 Kbit
  no switchport
  arp ageing timeout 1500
  <UP,LOOPBACK,RUNNING>
  VRF Binding: Not bound
  DHCP client is disabled.
  Encapsulation LOOPBACK
    0 packets input 0 bytes
    0 multicast frames 0 compressed
    0 input errors 0 frame 0 overrun 0 fifo
    0 packets output 0 bytes 0 underruns
    0 output errors 0 collisions 0 fifo
```

show interface mgmt

Displays management interface configuration information.

Syntax

`show interface mgmt` *<management interface>* **`[brief|capabilities| description|flowcontrol|mac-address|transceiver]`**

where:

Parameter	Function
management interface	The management interface number. The number is 0.
`brief`	Displays a short interface configuration summary.
`capabilities`	Displays interface capabilities (speed, duplex etc.).
`description`	Displays interface description.
`flowcontrol`	Displays interface IEEE 802.3x flow control status.
`mac-address`	Displays interface MAC address.
`transceiver`	Displays interface transceiver information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays configuration information for the management interface:

```
Switch> show interface mgmt 0

Interface mgmt0
  Hardware is Management Ethernet  Current HW addr: a897.dcde.2500
  Physical:a897.dcde.2500  Logical:(not set)
  index 3 metric 1 MTU 1500 Bandwidth 1000000 Kbit
  no switchport
  arp ageing timeout 1500
  <UP,BROADCAST,RUNNING,ALLMULTI,MULTICAST>
  VRF Binding: Not bound
  Speed 1000 Mb/s Duplex full
  IPV6 DHCP IA-NA client is enabled.
  inet 10.241.41.21/25 broadcast 10.241.41.127
  inet6 fe80::aa97:dcff:fede:2500/64
  RX
    1604059 input packets 8 unicast packets 1504132 multicast packets
    99919 broadcast packets 316897210 bytes
  TX
    63636 output packets 182 unicast packets 63453 multicast packets
    1 broadcast packets 9846996 bytes
```

show interface port-channel

Displays Link Aggregation Group (LAG) interface configuration information.

Syntax

```
show interface port-channel <LAG number> [switchport|
|brief|capabilities|counters|description|flowcontrol|
|mac-address|status|transceiver]
```

where:

Parameter	Function
LAG number or range	The LAG number. Range is from 1 to 4096.
switchport	Displays interface bridging configuration.
brief	Displays a short interface configuration summary.
capabilities	Displays interface capabilities (speed, duplex etc.).
counters	Displays interface statistics.
description	Displays interface description.
flowcontrol	Displays interface IEEE 802.3x flow control status.
mac-address	Displays interface MAC address.
status	Displays interface status.
transceiver	Displays interface transceiver information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays configuration information for LAG 12:

```
Switch> show interface port-channel 12

Interface po12
  Hardware is AGGREGATE  Current HW addr: 0e00.0000.0003
  Physical:(not set)  Logical:(not set)
  index 100012 metric 1 MTU 1500 Bandwidth 0 Kbit
  Port Mode is access
  <UP,BROADCAST,MULTICAST>
  VRF Binding: Not bound
  No members
  30 seconds input rate 0 bits/sec, 0 bytes/sec, 0 packets/sec
  30 seconds output rate 0 bits/sec, 0 bytes/sec, 0 packets/sec
  Load-Interval #2: 5 minute (300 seconds)
    input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
  RX
    0 unicast packets  0 multicast packets  0 broadcast packets
    0 input packets  0 bytes
    0 jumbo packets  0 storm suppression packets
    0 giants  0 input error  0 short frame  0 overrun  0 underrun
    0 watchdog  0 if down drop
    0 input with dribble  0 input discard(includes ACL drops)
    0 Rx pause
  TX
    0 unicast packets  0 multicast packets  0 broadcast packets
    0 output packets  0 bytes
    0 jumbo packets
    0 output errors  0 collision  0 deferred  0 late collision
    0 lost carrier  0 no carrier  0 babble
    0 Tx pause
  0 interface resets
Automatic policy provisioning is disabled on this interface
```

show interface vlan

Displays Virtual LAN (VLAN) interface configuration information.

Syntax

show interface vlan {all|<*VLAN number*> **[brief|capabilities|**
description|flowcontrol|mac-address|switchport|transceiver]}

where:

Parameter	Function
`all`	Displays interface configuration information for all VLANs.
VLAN number	The VLAN number. Range is from 1 to 4094.
`brief`	Displays a short interface configuration summary.
`capabilities`	Displays interface capabilities (speed, duplex etc.).
`description`	Displays interface description.
`flowcontrol`	Displays interface IEEE 802.3x flow control status.
`mac-address`	Displays interface MAC address.
`transceiver`	Displays interface transceiver information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays interface configuration information for VLAN 1:

```
Switch> show interface vlan 1

Interface Vlan1
  Hardware is VLAN  Current HW addr: a897.dcde.2501
  Physical:(not set)  Logical:(not set)
  index 9 metric 1 MTU 1500 Bandwidth 0 Kbit
  no switchport
  arp ageing timeout 1500
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  DHCP client is disabled.
```

show interface counters

Displays interface traffic statistics.

Syntax

show interface [<*interface name*>**|ethernet** <*chassis number/port number*>**|loopback** <*loopback interface*>**|mgmt 0|port-channel** <*LAG number*>**|vlan** <*VLAN ID*>**] counters [brief|detailed [all|snmp]|errors|snmp|storm-control|trunk]**

where:

Parameter	Function
interface name	Displays traffic statistics for the interface specified by its name.
ethernet *chassis number/port number*	Displays traffic statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays traffic statistics for the specified loopback interface. The *loopback interface* is an integer from 0 to 7.
mgmt 0	Displays traffic statistics for the management interface.
port-channel *LAG number*	Displays traffic statistics for the specified Link Aggregation Group (LAG). The *LAG number* is an integer from 1 to 4096.
vlan *VLAN ID*	Displays traffic statistics for the specified VLAN. The *VLAN ID* is an integer from 1 to 4094.
brief	Displays interface input and output rates.
detailed	Displays non-zero interface statistics.
detailed all	Displays all interface statistics.
detailed snmp	Displays Simple Network Management Protocol (SNMP) Management Information Base (MIB) interface statistics.
errors	Displays interface error statistics.
snmp	Displays interface SNMP MIB statistics.
storm-control	Displays interface storm-control statistics.
trunk	Displays trunk port statistics.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays interface counter information:

```
Switch> show interface counters
--------------------------------------------------------------------------
Port                        InOctets                       InUcastPkts
--------------------------------------------------------------------------
Eth1/1                            0                              0
Eth1/2                            0                              0
Eth1/3                            0                              0
Eth1/4                            0                              0
Eth1/5                            0                              0
.......
Port                        InMcastPkts                    InBcastPkts
--------------------------------------------------------------------------
Eth1/1                            0                              0
Eth1/2                            0                              0
Eth1/3                            0                              0
Eth1/4                            0                              0
Eth1/5                            0                              0
......
Port                        OutOctets                      OutUcastPkts
--------------------------------------------------------------------------
Eth1/1                            0                              0
Eth1/2                            0                              0
Eth1/3                            0                              0
Eth1/4                            0                              0
Eth1/5                            0                              0
......
Port                        OutMcastPkts                   OutBcastPkts
--------------------------------------------------------------------------
Eth1/1                            0                              0
Eth1/2                            0                              0
Eth1/3                            0                              0
Eth1/4                            0                              0
Eth1/5                            0                              0
...
```

show interface egress-discard-details

show interface egress discards counters.

Syntax

```
show interface egress-discard-details
```

Modes

All command modes

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays interface egress discards counters:

```
Switch> show interface egress-discard-details
Ethernet1/1
+---------------------------------------+---------------------------+
|        Counter Description             |          Count            |
|                                        |                           |
+---------------------------------------+---------------------------+
  HOL-blocking Discards                                 0
  MMU Discards                                          0
  Cell Error Discards                                   0
  MMU Aging Discards                                    0
  Other Discards                                        0
+---------------------------------------+---------------------------+
Ethernet1/2/1
+---------------------------------------+---------------------------+
|        Counter Description             |          Count            |
|                                        |                           |
```

show interface ingress-discard-details

show interface ingress discards counters.

Syntax

```
show interface ingress-discard-details
```

Modes

All command modes

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays interface ingress discards counters:

```
Switch> show interface ingress-discard-details
Ethernet1/1
+---------------------------------------+----------------------------+
|        Counter Description            |          Count             |
|                                       |                            |
+---------------------------------------+----------------------------+
  IPv4 Discards                                      0
  IPv6 Discards                                      0
  STP Discards                                       0
  Policy Discards                                    0
  ACL Drops                                          0
  Receive Drops                                      0
  Vlan Discards                                      0
```

show interface status

Displays interface configuration information, including interface name and number, link status (up, down or error disabled), VLAN membership, duplex mode (half, full or auto), port speed and interface type.

Syntax

show interface [<*interface name*>**|ethernet** <*chassis number***/***port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**| port-channel** <*LAG number or range*>**|vlan** <*VLAN number*>**] status [down|err-disabled|up]**

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number/port number*	Displays configuration information for the specified ethernet port. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays configuration information for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays configuration information for the specified management interface. The *management interface* is 0.
port-channel *LAG number or range*	Displays configuration information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays configuration information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
down	Displays only interfaces in the down state.
err-disabled	Displays only interfaces in the error disabled state.
up	Displays only interfaces in the up state.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays configuration information for all interfaces:

```
Switch> show interface status

--------------------------------------------------------------------------
Port            Name            Status     Vlan    Duplex  Speed   Type
--------------------------------------------------------------------------
Ethernet1/1     ethernet 1/1    notconnec  trunk    full   10000   eth
Ethernet1/2     --              notconnec  2        full   10000   eth
Ethernet1/3     --              notconnec  3        full   10000   eth
Ethernet1/4     --              notconnec  4        full   10000   eth
Ethernet1/5     --              notconnec  5        full   10000   eth
Ethernet1/6     --              notconnec  6        full   10000   eth
Ethernet1/7     --              disabled   7        full   10000   eth
Ethernet1/8     --              disabled   8        full   10000   eth
Ethernet1/9     --              disabled   9        full   10000   eth
Ethernet1/10    --              disabled   10       full   10000   eth
...
```

show interface trunk

show switch trunk port information.

Syntax

show interface trunk [vlan *<VLAN range>***]**

where:

Parameter	Function
vlan *VLAN range*	Displays switch trunk port information associated to any Virtual LANs (VLANs) specified in the VLAN range. The *VLAN range* is from 1 to 4093.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays switch trunk port information:

```
Switch> show interface trunk
----------------------------------------------------------------
Port            Native          Status    Port
                Vlan                      Aggregation
----------------------------------------------------------------
Ethernet1/1     10              trunk     1000
Ethernet1/2     10              trunk     1000
...
po1000          10              trunk     --


----------------------------------------------------------------
Port            Vlans Allowed on Trunk
----------------------------------------------------------------
Ethernet1/1     10-15
Ethernet1/2     10-15
Ethernet1/9     10-15
...
po4096          10-15
----------------------------------------------------------------
Port            STP Forwarding
----------------------------------------------------------------
Ethernet1/25    none
Ethernet1/33    10-15
Ethernet1/49/1 none
...
po4096          none
```

show inventory

Displays the switch's physical inventory information, such as chassis, power supplies or fans.

Syntax

show inventory

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays physical inventory information:

```
Switch> show inventory

+----+---------------+--------------+--------------+------+-------------+
| ID | Name          | Description  | PID          | REV  | SN#         |
+----+---------------+--------------+--------------+------+-------------+
  01   Chassis         System Board   GSXXXX         XXXX   YO52MV4CRO26
  02   Power Supply 1  Power Supply
  03   Power Supply 2  Power Supply
  04   Fan 1           Fan Module
  05   Fan 2           Fan Module
  06   Fan 3           Fan Module
  07   Fan 4           Fan Module
  08   Fan 5           Fan Module
  09   Fan 6           Fan Module
  10   Fan 7           Fan Module
  11   Fan 8           Fan Module
```

show ip access-lists

Displays all the configured IPv4 Access Control Lists (ACLs).

Syntax

show ip access-lists [*<access-list name>***] [expanded|summary]**

where:

Parameter	Function
access-list name	The name of the ACL.
expanded	Displays the contents of each ACE (Access Control Entry).
summary	Displays a summary of each ACL, including the total number of configured ACEs and the interfaces on which the ACL is configured or active.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following commands show ACLs:

```
Switch> show ip access-lists

IP access list  copp-system-acl-authentication
      10 permit tcp any eq 389 any
      20 permit udp any eq 1812 any
      30 permit udp any eq 1813 any
IP access list  copp-system-acl-domain
      10 permit tcp any eq domain any
      20 permit udp any eq domain any
IP access list  copp-system-acl-igmp
      10 permit igmp any any
IP access list  copp-system-acl-igmp-query
      10 permit igmp any any 17
IP access list  copp-system-acl-ntp
      10 permit udp any eq ntp any
IP access list  copp-system-acl-pim
      10 permit pim any any
...
```

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show ip arp

Displays Address Resolution Protocol (ARP) entries.

Syntax

show ip arp [<*IPv4 address*>**|**<*interface name*>**|detail|ethernet** *<chassis number/port number>***|mgmt 0|port-channel** *<LAG number>***|static| vlan** *<VLAN number>***] [vrf {all|default|management}]**

where:

Parameter	Function
IPv4 address	Displays ARP entries for the specified IPv4 address.
interface name	Displays ARP entries for the specified interface.
detail	Displays detailed ARP information.
ethernet *chassis number/port number*	Displays ARP entries for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
mgmt 0	Displays ARP entries for the management interface.
port-channel *LAG number or range*	Displays ARP entries for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
static	Displays static ARP entries.
vlan *VLAN number*	Displays ARP entries for the specified VLAN. The *VLAN number* is from 1 to 4094.
vrf all	Displays ARP entries associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays ARP entries associated with the default VRF instance.
vrf management	Displays ARP entries associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all ARP VRF entries:

```
Switch> show ip arp vrf
Flags: D - Static Adjacencies attached to down interface

Current ARP configuration
ARP refresh: enabled
Global ARP timeout: 1500

IP ARP Table for context default
Total number of entries: 6
Address        Age        MAC Address     Interface     State
5.0.0.2        00:00:35   0817.f462.6400  Ethernet1/9   REACHABLE
5.0.0.20       00:00:03   0000.0000.0001  Ethernet1/9   REACHABLE
5.0.0.21       00:00:03   0000.0000.0002  Ethernet1/9   REACHABLE
5.0.0.22       00:00:03   0000.0000.0003  Ethernet1/9   REACHABLE
5.0.0.23       00:01:22   0000.0000.0004  Ethernet1/9   STALE
5.0.0.200               - 0000.0000.0200  Ethernet1/9   PERMANENT
10.100.121.1 00:01:46    0022.00ad.4500  mgmt0         REACHABLE
```

The following command displays ARP entries for interface ethernet 1/12:

```
Switch> show ip arp ethernet 1/12
```

The following command displays all static ARP entries:

```
Switch> show ip arp static
```

show ip arp inspection

Displays the current Dynamic ARP Inspection (DAI) configuration.

Syntax

show ip arp inspection [filter *<ARP filter name>***|vlan** *<VLAN number>***]**

where:

Parameter	Function
filter *<ARP filter name>*	Displays the current DAI configuration for the specified ARP filter.
vlan *<VLAN number>*	Displays the current DAI configuration for the specified VLAN. The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays DAI configuration:

```
Switch> show ip arp inspection
```

show ip arp statistics

Displays Address Resolution Protocol (ARP) statistics.

Syntax

`show ip arp statistics [`<*interface name*>**`|ethernet`** <*chassis number***/***port number*>**`|interface-all|loopback`** <*loopback interface*>**`|mgmt`** <*management interface*>**`|port-channel`** <*LAG number or range*>**`|vlan`** <*VLAN number*>**`] [vrf {all|default|management}]`**

where:

Parameter	Function
interface name	The name of the interface.
`ethernet` *chassis number***/***port number*	Displays ARP statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface-all`	Displays ARP statistics for all interfaces.
`loopback` *loopback interface*	Displays ARP statistics for the specified loopback interface. The *loopback interface* is from 0 to 7.
`mgmt` *management interface*	Displays ARP statistics for the specified management interface. The *management interface* is 0.
`port-channel` *LAG number or range*	Displays ARP statistics for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`vlan` *VLAN number*	Displays ARP statistics for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
`vrf all`	Displays ARP statistics for entries associated with any Virtual Routing and Forwarding (VRF) instance.
`vrf default`	Displays ARP statistics for entries associated with the default VRF instance.
`vrf management`	Displays ARP statistics for entries associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays ARP statistics:

```
Switch> show ip arp statistics

ARP statistics for context default

ARP Adjacency statistics

  Adds 5, Deletes 0, Timeouts 0
```

show ip arp summary

Displays Address Resolution Protocol (ARP) adjacency summary.

Syntax

show ip arp summary [*<interface name>***|ethernet** *<chassis number/ port number>***|loopback** *<loopback interface>***|mgmt** *<management interface>***| port-channel** *<LAG number or range>***|vlan** *<VLAN number>***] [vrf {all| default|management}]**

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number/port number*	Displays ARP adjacency summary for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays ARP adjacency summary for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays ARP adjacency summary for the specified management interface. The *management interface* is 0.
port-channel *LAG number or range*	Displays ARP adjacency summary for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays ARP adjacency summary for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
vrf all	Displays ARP adjacency summary for entries associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays ARP adjacency summary for entries associated with the default VRF instance.
vrf management	Displays ARP adjacency summary for entries associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays ARP adjacency summary:

```
Switch> show ip arp summary

IP ARP Table - Adjacency Summary
Resolved : 2
Incomplete : O
Unknown : O
Total : 2
```

show ip as-path-access-list

Displays Autonomous System (AS) path access lists.

Syntax

`show ip as-path-access-list [`<*AS path access list name*>**`]`**

where:

Parameter	Function
AS path access list name	The name of the AS path access list.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays AS path access lists:

```
Switch> show ip as-path-access-list
AS path access list as_acl_1
    permit ^1000$
    deny ^1500.+
    permit _100_200$
AS path access list as_acl_2
    deny _2000_
    permit .*
Switch#
```

show ip bgp

Displays Border Gateway Protocol (BGP) route information.

Syntax

show ip bgp [ipv4 unicast] [*<IPv4 network address>***[/***<prefix length>*
[longer-prefixes]]] [vrf {all|default}]

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
IPv4 network address	The IPv4 network address.
prefix length	The IPv4 network mask length.
longer-prefixes	Displays BGP route information for the specified network and any subnetworks with a prefix length equal to or greater than the prefix specified.
vrf all	Displays BGP route associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP route associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP route information:

```
Switch> show ip bgp
BGP routing table information for VRF default address family IPV4 unicast
BGP table version is 779, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal, l - labeled
              S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete, |- multipath

    Network          Next Hop         Metric       LocPrf    Weight   Path
*d  190.1.1.0/24     100.1.91.1                               O       400
100i
*d                   100.1.89.1                               O       400
100i
*d                   100.1.5.1                                O       400
100i
*d                   100.1.0.1                                O       400
100i
*d                   100.1.28.1                               O       400
100i
*d                   100.1.34.1                               O       400
100i
*d                   100.1.50.1                               O       400
100i
*d                   100.1.82.1                               O       400
100i
*d                   100.1.78.1                               O       400
100i
...
```

show ip bgp attribute-info

Displays Border Gateway Protocol (BGP) attribute information.

Syntax

```
show ip bgp attribute-info
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP attribute information:

```
Switch> show ip bgp attribute-info
attr[5] nexthop 0.0.0.0
attr[1000] nexthop 20.111.2.1
attr[1000] nexthop 20.211.2.1
attr[1000] nexthop 20.111.2.1
attr[1000] nexthop 20.211.2.1
attr[1000] nexthop 20.111.2.1
attr[1000] nexthop 20.211.2.1
attr[1000] nexthop 20.111.2.1
attr[1000] nexthop 20.211.2.1
attr[5] nexthop 9.3.11.254
attr[5] nexthop 20.111.2.1
attr[5] nexthop 20.111.2.1
attr[5] nexthop 20.111.2.1
attr[5] nexthop 20.111.2.1
attr[5] nexthop 20.211.2.1
attr[5] nexthop 20.211.2.1
attr[5] nexthop 20.211.2.1
attr[5] nexthop 20.211.2.1
attr[5] nexthop 20.111.1.2
attr[5] nexthop 20.211.1.2
attr[2000] nexthop 20.111.1.1
attr[1000] nexthop 20.211.1.1
attr[2000] nexthop 20.111.1.1
...
```

show ip bgp cidr-only

Displays Border Gateway Protocol (BGP) routes with Classless Interdomain Routing (CIDR).

Syntax

show ip bgp [ipv4 unicast] cidr-only

where:

Parameter	Function
ipv4 unicast	Displays BGP routes with CIDR only for the IPv4 unicast address family.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes with CIDR:

```
Switch> show ip bgp cidr-only
LP11#show ip bgp cidr-only
BGP routing table information for VRF default address family IPV4 unicast
BGP table version is 226, local router ID is 20.211.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,
l - labeled
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete, |- multipath

    Network         Next Hop        Metric      LocPrf    Weight    Path
*>  9.3.11.0/24     0.0.0.0                                32768     ?
*>i 9.4.12.0/24     20.111.1.1                   100       0         ?
* i|               20.111.2.1                   100       0         ?
* i|               20.211.1.1                   100       0         ?
* i|               20.211.2.1                   100       0         ?
*>i 9.5.13.0/24     20.111.1.1                   100       0         ?
* i|               20.111.2.1                   100       0         ?
* i|               20.211.1.1                   100       0         ?
* i|               20.211.2.1                   100       0         ?
*>i 9.6.14.0/24     20.111.1.1                   100       0         ?
...
```

show ip bgp community

Displays Border Gateway Protocol (BGP) routes that match the specified community.

Syntax

show ip bgp [ipv4 unicast] community [*<community number>*
[exact-match]] [internet] [local-AS] [no-advertise]
[no-export]

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
community number	The number of the BGP community. The format for the community number is AA:NN (autonomous system number: community number).
exact-match	Displays only an exact match for the specified community.
internet	Displays BGP routes that are part of the well-known internet community.
local-AS	Displays BGP routes not advertised outside the local autonomous system (AS).
no-advertise	Displays BGP routes not advertised to any peers (internal or external).
no-export	Displays BGP routes only advertised to peers in the same AS.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching any community:

```
Switch> show ip bgp community
```

show ip bgp community vrf

Displays Border Gateway Protocol (BGP) routes that match any communities associated with the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

show ip bgp [ipv4 unicast] community vrf {all|default}

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
all	Displays BGP routes matching communities associated with any VRF instance.
default	Displays BGP routes matching communities associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching communities associated with the default VRF instance:

```
Switch> show ip bgp community vrf all
```

show ip bgp community-info

show Border Gateway Protocol (BGP) community information.

Syntax

```
show ip bgp community-info
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP community information:

```
Switch> show ip bgp community-info
```

show ip bgp community-list

Displays Border Gateway Protocol (BGP) routes that match the specified community list.

Syntax

show ip bgp [all|{ipv4|ipv6} unicast] community-list
<community list name> **[exact-match]**

where:

Parameter	Function
`all`	Displays BGP information for all IP address families.
`ipv4`	Displays BGP information for the IPv4 address family.
`ipv6`	Displays BGP information for the IPv6 address family.
`unicast`	Displays BGP information for the unicast address family.
community list name	The name of the BGP community list.
`exact-match`	Displays only an exact match for the specified community list.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching community list 'comlist1':

```
Switch> show ip bgp community-list comlist1
```

show ip bgp community-list vrf

Displays Border Gateway Protocol (BGP) routes that match the specified community list associated with the selected Virtual Routing and Forwarding (VRF) instance.

Syntax

show ip bgp [all|{ipv4|ipv6} unicast] community-list *<community list name>* **vrf {all|default}**

where:

Parameter	Function
`all`	Displays BGP information for all IP address families.
`ipv4`	Displays BGP information for the IPv4 address family.
`ipv6`	Displays BGP information for the IPv6 address family.
`unicast`	Displays BGP information for the unicast address family.
community list name	The name of the BGP community list.
`all`	Displays BGP routes matching the community list associated with any VRF instance.
`default`	Displays BGP routes matching the community list associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the community list 'comlist1' associated with any VRF instance:

```
Switch> show ip bgp community-list vrf all
```

show ip bgp dampening

Displays Border Gateway Protocol (BGP) dampening information.

Syntax

```
show ip bgp [all|{ipv4|ipv6} unicast] dampening
{dampened-paths|flap-statistics|parameters} [vrf {all|
|default}]
```

where:

Parameter	Function
all	Displays BGP information for all IP address families.
ipv4	Displays BGP information for the IPv4 address family.
ipv6	Displays BGP information for the IPv6 address family.
unicast	Displays BGP information for the unicast address family.
dampened-paths	Displays all dampened paths.
flap-statistics	Displays flap statistics for BGP routes.
parameters	Displays all dampening parameters.
vrf all	Displays BGP dampening information for all Virtual Routing and Forwarding (VRF) instances.
vrf default	Displays BGP dampening information for the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all dampened paths:

```
Switch> show ip bgp dampening dampened-paths
```

show ip bgp extcommunity-list

Displays Border Gateway Protocol (BGP) routes matching the specified extended community list.

Syntax

show ip bgp extcommunity-list *<extended community list name>*
[exact-match] [vrf {*<VRF instance name>***|default}]**

where:

Parameter	Function
extended community list name	The name of the extended community list.
exact-match	Displays BGP routes exactly matching the specified extended community list.
vrf *VRF instance name*	Displays BGP routes matching the extended community list associated with the specified Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP routes matching the extended community list associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the extended community list 'extcomlist1':

```
Switch> show ip bgp extcommunity-list extcomlist1
```

show ip bgp filter-list

Displays Border Gateway Protocol (BGP) routes matching a specified filter list.

Syntax

show ip bgp [ipv4 unicast] filter-list *<filter list name>*
[exact-match] [vrf {*<VRF instance name>***|all|default}]**

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 address family.
filter list name	The name of the BGP filter list.
exact-match	Displays BGP routes exactly matching the specified filter list.
vrf *VRF instance name*	Displays BGP routes matching the filter list associated with the specified Virtual Routing and Forwarding (VRF) instance.
vrf all	Displays BGP routes matching the filter list associated with all VRF instances.
vrf default	Displays BGP routes matching the filter list associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes that match filter list 'flist3':

```
Switch> show ip bgp filter-list flist3
```

show ip bgp inconsistent-as

Displays Border Gateway Protocol (BGP) routes with inconsistent Autonomous System (AS) paths.

Syntax

show ip bgp [ipv4 unicast] inconsistent-as

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes with inconsistent AS paths:

```
Switch> show ip bgp inconsistent-as
```

show ip bgp neighbors

Displays Border Gateway Protocol (BGP) neighbors.

Syntax

```
show ip bgp [ipv4 unicast] neighbors [<IPv4 or IPv6 address>
[advertised-routes|connection-retrytime|hold-time|keepalive|
|keepalive-interval|notification|open|rcvd-msgs|
|received-routes|sent-msgs|update]]
```

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
advertised-routes	Displays the BGP routes advertised for the specified neighbor.
connection-retryti me	Displays the time interval the switch waits until it tries to contact the BGP neighbor.
hold-time	Displays the time interval the switch waits until it will transition the BGP neighbor to IDLE state, if the switch doesn't receive an update or keepalive message from the neighbor.
keepalive	Displays keepalive messages. Keepalive messages are sent to determine if a connection has failed or is unavailable.
keepalive-interval	Displays the time interval the switch waits until it sends another keepalive message to the BGP neighbor.
notification	Displays notification messages. Notification messages are sent when an error is detected.
open	Displays open messages. Open Messages are sent to create a BGP session between neighbors.
rcvd-msgs	Displays packets received from the BGP neighbor.
received-routes	Displays the BGP routes received from the specified neighbor.
sent-msgs	Displays packets sent to the BGP neighbor.
update	Displays update messages. Update messages are used to transfer routing information between BGP neighbors.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP neighbors:

```
Switch> show ip bgp neighbors

BGP neighbor is 9.9.9.1, remote AS 100, local AS 200, external link
BGP version 4, remote router ID 0.0.0.0
BGP state = Idle
Last read , hold time is 90, keepalive interval is 30 seconds
Received 11020 messages, 6234 notifications, 0 in queue
Sent 17226 messages, 9 notifications, 0 in queue
Route refresh request: received 4, sent 0
Minimum time between advertisement runs is 30 seconds
For address family: IPv4 Unicast
BGP table version 2308, neighbor version 0
Index 1, Offset 0, Mask 0x2
Community attribute sent to this neighbor (both)
0 accepted prefixes
0 announced prefixes

Connections established 12; dropped 13
External BGP neighbor may be up to 10 hops away.
Last Reset: 00:00:03, due to BGP Notification received
Notification Error Message: (OPEN Message Error/Bad Peer AS.)
```

The following command displays the connection retry timer for a BGP neighbor:

```
Switch> show ip bgp neighbors 10.243.2.54 connection-retrytime
```

The following command displays the hold timer for a BGP neighbor:

```
Switch> show ip bgp neighbors 10.243.2.54 hold-time
```

The following command displays the keepalive timer:

```
Switch> show ip bgp neighbors 10.243.2.54 keepalive-interval
```

The following command displays the BGP routes received from a neighbor:

```
Switch> show ip bgp neighbors 10.243.2.54 received-routes
```

The following command displays BGP packets sent to a neighbor:

```
Switch> show ip bgp neighbors 10.243.2.54 sent-msgs
```

Restrictions

When using the parameter ipv4 unicast, the only available commands are:

- **show ip bgp ipv4 unicast neighbors**
- **show ip bgp ipv4 unicast neighbors** *<IPv4 or IPv6 address>*
- **show ip bgp ipv4 unicast neighbors** *<IPv4 or IPv6 address>* **advertised-routes**
- **show ip bgp ipv4 unicast neighbors** *<IPv4 or IPv6 address>* **received-routes**

show ip bgp neighbors routes

Displays Border Gateway Protocol (BGP) routes received or advertised to or from the specified neighbor.

Syntax

show ip bgp [ipv4 unicast] neighbors *<IPv4 or IPv6 address>* **routes [advertised|received] [vrf all|default]**

where:

Parameter	Function
ipv4 unicast	Displays BGP routes only for the IPv4 unicast address family.
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
advertised	Displays BGP routes advertised to the neighbor.
received	Displays BGP routes received from the neighbor.
vrf all	Displays BGP routes for neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP routes for neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes received or advertised to or from the neighbor with IPv4 address 10.254.22.36:

```
Switch> show ip bgp neighbors 10.254.22.36 routes

BGP routing table information for VRF default address family IPV4 unicast
BGP table version is 228, local router ID is 20.211.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,
l - labeled
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete, |- multipath

    Network         Next Hop        Metric      LocPrf   Weight    Path
*>i 50.11.0.1/32      9.3.11.1                     O        O        i

Total number of prefixes 1
```

Restrictions

When using the ipv4 unicast parameter, the only available command is:

show ip bgp ipv4 unicast neighbors *<IPv4 or IPv6 address>* **routes**

show ip bgp neighbors vrf

Displays Border Gateway Protocol (BGP) neighbors associated with the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

show ip bgp neighbors [*<IPv4 or IPv6 address>***] vrf {all|default}**

where:

Parameter	Function
IPv4 or IPv6 address	The IPv4 or IPv6 address of the BGP neighbor.
all	Displays BGP neighbors associated with any VRF instance.
default	Displays BGP neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP neighbors associated with the default VRF instance:

```
Switch> show ip bgp neighbors vrf default
```

show ip bgp paths

Displays all the Border Gateway Protocol (BGP) paths stored in the database.

Syntax

show ip bgp [ipv4 unicast] paths

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP path information:

```
Switch> show ip bgp paths
Address       Refcnt Path
[0x10560fe8:0] (55305)
```

show ip bgp prefix-list

Displays Border Gateway Protocol (BGP) routes matching the specified prefix list.

Syntax

```
show ip bgp [ipv4 unicast] prefix-list <prefix list name>
[exact-match] [vrf {all|default}]
```

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
prefix list name	The name of the prefix list used to filter BGP routes.
exact-match	Displays BGP routes exactly matching the specified prefix list.
vrf all	Displays BGP routes matching the prefix list associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP routes matching the prefix list associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the prefix list 'preflist1':

```
Switch> show ip bgp prefix-list preflist1
```

show ip bgp quote-regexp

Displays Border Gateway Protocol (BGP) routes matching the autonomous system (AS) path regular expression.

Syntax

show ip bgp [ipv4 unicast] quote-regexp *<regular expression>*

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
regular expression	The regular expression to match the AS path.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the AS path regular expression "65550":

```
Switch> show ip bgp quote-regexp "65550"
```

show ip bgp received-paths

Displays Border Gateway Protocol (BGP) routes received from other neighbors.

Syntax

`show ip bgp received-paths [vrf {all|default}]`

where:

Parameter	Function
vrf all	Displays BGP routes received from other neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP routes received from other neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes received from other neighbors:

```
Switch> show ip bgp received-paths
```

show ip bgp regexp

Displays Border Gateway Protocol (BGP) routes matching the autonomous system (AS) path regular expression.

Syntax

show ip bgp [ipv4 unicast] regexp *<regular expression>*

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
regular expression	The regular expression to match the AS path.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes matching the AS path regular expression "172":

```
Switch> show ip bgp regexp 172
```

show ip bgp route-map

Displays Border Gateway Protocol (BGP) route maps.

Syntax

show ip bgp [ipv4 unicast] route-map *<route map name>* **[vrf {all|default}]**

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
route map name	The name of the route map.
vrf all	Displays BGP route maps associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP route maps associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP route map 'path-34':

```
Switch> show ip bgp route-map path-34
```

show ip bgp scan

Displays Border Gateway Protocol (BGP) scan statistics.

Syntax

show ip bgp scan

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP scan statistics:

```
Switch> show ip bgp scan
BGP VRF: (Default) VRF_ID O
BGP scan interval is 6O
scan remain-time: 3
Current BGP nexthop cache:
 9.3.11.1 valid [IGP metric O]
 20.111.1.1 valid [IGP metric O]
 20.111.2.1 valid [IGP metric O]
 20.211.1.1 valid [IGP metric O]
 20.211.2.1 valid [IGP metric O]
```

show ip bgp statistic

Displays Border Gateway Protocol (BGP) traffic statistics.

Syntax

show ip bgp statistic

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP traffic statistics:

```
Switch> show ip bgp statistic
Neighbor aggregated statistics (sent/received)
Msgs           Bytes           Opens           Updates
140275/140375       3518604/0           5/5             151/272
Keepalives  Notifications  Route-refresh  Capabilities
140119/140098          0/0           0/0           0/0

RIB routes statistics for Default
  Route additions sent: 48865
  Route additions sent failed: 0
  Route deletions sent: 1
  Route deletions sent failed: 0
  Redistributed routes received: 5
  Redistributed routes additions: 5
    - Routes additions failed: 0
    - Routes matching route-maps: 0
  Redistributed route deletions: 0
    - Routes deletions failed: 0

BGP I/O Information
Active Open attempts          : 0
Passive Open attempts         : 0
BGP I/O Open loops            : 0
BGP I/O Open calls            : 0
...
BGP Yielded in packing        : 0
BGP No sendbuf for peer       : 0
BGP No withdraw buf for peer  : 0
BGP Yields in update peer loop : 0
No updates pending or no buffers: 0
No data to write              : 0
Msg queue recv errors         : 0
Sockets create/accept/close   : 2/4/5
Sockets create retries/failures : 0/0
Socket fd-close session       : 0
```

show ip bgp summary

Displays the status of all Border Gateway Protocol (BGP) neighbors.

Syntax

show ip bgp [ipv4 unicast] summary [vrf {all|default}]

where:

Parameter	Function
ipv4 unicast	Displays BGP information for the IPv4 unicast address family.
vrf all	Displays BGP connection status for neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP connection status for neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the connection status for all BGP neighbors:

```
Switch> show ip bgp summary
BGP router identifier 20.211.2.2, local AS number 64800
BGP table version is 228
1 BGP AS-PATH entries
O BGP community entries
1  Configured ebgp ECMP multipath: Currently set at 1
32  Configured ibgp ECMP multipath: Currently set at 32

Neighbor           V     AS MsgRcv MsgSen TblVer InQ OutQ Up/Down
State/PfxRcd
9.3.11.1           4  64800 28049  28279    225   O    O 3d05h54m
1
20.111.1.1         4  64800 28062  28027    227   O    O 3d05h54m
11055
20.111.2.1         4  64800 28061  28029    227   O    O 3d05h54m
11055
20.211.1.1         4  64800 28061  28030    227   O    O 3d05h54m
11055
20.211.2.1         4  64800 28061  28028    227   O    O 3d05h54m
11055

Total number of neighbors 5

Total number of Established sessions 5
```

show ip bgp vrf

Displays Border Gateway Protocol (BGP) information for the specified Virtual Routing and Forwarding (VRF) instance.

Syntax

`show ip bgp vrf {all|default}`

where:

Parameter	Function
all	Displays BGP information for all VRF instances.
default	Displays BGP information for the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP information for the default VRF instance:

```
Switch> show ip bgp vrf default
```

show ip ecmp weight

Displays next-hop weight information.

Syntax

show ip ecmp weight {interface {*<IF name>***|ethernet** *<slot/chassis>***|**
port-channel *<PA number>***}** *<IP address>***}**

where:

Parameter	Description
IF name	Displays information for a specific interface name; a string.
slot/chassis	Displays information for a specific ethernet slot and chassis numbers.
PA number	Displays information for a specific port aggregation number; an integer from 1-4096.
IP address	Displays information for a specific IPv4 or IPv6 address for the next hop.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays ECMP weight information:

```
Switch# show ip ecmp weight 1.1.1.1
```

show ip community-list

Displays Border Gateway Protocol (BGP) community lists.

Syntax

show ip community-list

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP community lists:

```
Switch> show ip community-list
Named Community standard list commlist_1
    permit 100:200
    deny 30:40
    permit local-AS
Named Community expanded list commlist_2
    permit ^100:1_100:2$
    deny ^100:1$
    deny 200:100.200:200.+
    permit .*
```

show ip dhcp relay

Displays Dynamic Host Configuration Protocol version 4 (DHCPv4) relay service configuration and statistics.

Syntax

`show ip dhcp relay [address [interface {ethernet [`*`<chassis number/port number>`***`]|vlan [`***`<VLAN number>`***`]}] [vrf {`***`<VRF instance>`***`|all|default}]`**

where:

Parameter	Function
`address`	Displays configured DHCPv4 addresses.
`interface ethernet`	Displays configured DHCPv4 address on all ethernet interfaces.
chassis number/port number	Displays configured DHCPv4 address on the specified ethernet interface. The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface vlan`	Displays configured DHCPv4 addresses on all Virtual LAN (VLAN) interfaces.
VLAN number	Displays configured DHCPv4 addresses on the specified VLAN interface. The *VLAN number* is from 1 to 4094.
`vrf` *VRF instance*	Displays DHCPv4 information for the specified Virtual Routing and Forwarding (VRF) instance.
`vrf all`	Displays DHCPv4 information for all the VRF instances.
`vrf default`	Displays DHCPv4 information for the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the DHCPv4 configuration:

```
Switch> show ip dhcp relay
```

show ip dhcp snooping

Displays Dynamic Host Configuration Protocol (DHCP) Snooping information.

Syntax

show ip dhcp snooping [binding|counters]

where:

Parameter	Description
binding	Displays the DHCP Snooping binding table.
counters	Displays DHCP Snooping statistics.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays DHCP Snooping information:

```
Switch> show ip dhcp snooping
```

The following command displays the DHCP Snooping binding table:

```
Switch> show ip dhcp snooping binding

Mac Address       IP Address     Lease(seconds) Type     VLAN Interface
------------------------------------------------------------------------------
OO:25:b3:18:1b:24 192.168.1.100  6662           Dynamic  100   ethernet 1/24
Total number of bindings: 1
```

show ip extcommunity-list

Displays Border Gateway Protocol (BGP) extended community lists.

Syntax

show ip extcommunity-list *<community name>*

where:

Parameter	Function
<community name>	Name of the community.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP extended community lists:

```
Switch> show ip extcommunity-list

Named extended community standard list ecommlist_1
    permit 100000:2
    deny 200002:300
    permit 11000:30
Named extended community expanded list ecommlist_2
    permit ^50000:5_50000:6$
    deny ^50000:5.+
    permit .*
```

show ip forwarding

Displays IPv4 forwarding status.

Syntax

```
show ip forwarding
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv4 forwarding status:

```
Switch> show ip forwarding

IP forwarding is on.
```

show ip igmp snooping

Displays Internet Group Management Protocol (IGMP) snooping information.

Syntax

show ip igmp snooping [vlan *<VLAN number>***]**

where:

Parameter	Function
vlan *<VLAN number>*	Displays IGMP Snooping information for the specified VLAN. The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IGMP Snooping information:

```
Switch> show ip igmp snooping

Global IGMP Snooping information
 IGMP Snooping Enabled
 IGMP Snooping V1/V2 Report Suppression Enabled
 General query transmission on TCN Enabled
 Static entries limit: O
 Report forwarding rate: 6OOO

IGMP Snooping information for Vlan1
 IGMP Snooping enabled
 IGMP Snooping Version: 3
 Robustness: 2 (operational: 2)
 Query Interval: 125 seconds (operational: 125 seconds)
 Group Membership Interval: 260 seconds
 Query Response Interval: 1O seconds
 Last Member Query Count: 2
 Last Member Query Interval: 1OOO milliseconds
 IGMPv2 fast-leave: disabled
 IGMPv1/v2 Report suppression: enabled
 IGMPv3 Report suppression: disabled
 Router port detection using: IGMP Queries
 Snooping Querier disabled
 Querier timeout: 255 seconds (default, operational: 255 seconds)
 Querier Startup Query Count: 2
 Querier Startup Query Interval: 31 seconds
 Number of router-ports: O
 Number of Groups: O
 Number of Joins: O
 Number of Leaves: O
 Active Ports:
  Ethernet1/1
```

show ip igmp snooping ecp

Displays Internet Group Management Protocol (IGMP) snooping Edge Control Protocol (ECP) information.

Syntax

```
show ip igmp snooping ecp {channels|statistics|
|upper-layer-protocols}
```

where:

Parameter	Function
channels	Displays IGMP ECP channel information.
statistics	Displays IGMP ECP statistics.
upper-layer-proto cols	Displays IGMP ECP upper layer protocol information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays VRRP ECP channel information:

```
Switch> show ip igmp snooping ecp channels

---- ECP CHANNELS ----
Ifindex    Ena    State    NextSeq    LastAck    FreeWindow
----------+------+--------+----------+----------+------------
```

show ip igmp snooping groups

Displays Internet Group Management Protocol (IGMP) snooping groups membership information.

Syntax

show ip igmp snooping groups [[<*multicast group IPv4 address*>**] [**<*source IPv4 address*>**] [vlan** <*VLAN number*>**] [detail]|interface {ethernet** <*chassis number***/***port number*>**|port-channel** <*LAG number*>**}]**

where:

Parameter	Function
multicast group IPv4 address	The group IPv4 address.
source IPv4 address	The source IPv4 address.
vlan <*VLAN number*>	Displays IGMP Snooping information for the specified VLAN. The *VLAN number* is from 1 to 4094.
detail	Displays detailed IGMP Snooping group membership information.
interface ethernet *chassis number***/***port number*	Displays IGMP entries for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays IGMP entries for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IGMP Snooping group membership information:

```
Switch> show ip igmp snooping groups

Total entries: 1OO Total IGMP groups: 1OO
Note: The <Total IGMP groups> number is computed as
      the number of unique (Group/Source, Vlan) entries.
IGMP Connected Group Membership
Flags: D - Dynamic, S - Static
Vlan  Grp/Src Addr    Interface      Flags  Expires  Version
10    237.1.1.1       Ethernet1/1      D    00:04:02  V2
10    237.1.1.2       Ethernet1/1      D    00:04:02  V2
10    237.1.1.3       Ethernet1/1      D    00:04:02  V2
10    237.1.1.4       Ethernet1/1      D    00:04:02  V2
10    237.1.1.5       Ethernet1/1      D    00:04:02  V2
10    237.1.1.6       Ethernet1/1      D    00:04:02  V2
10    237.1.1.7       Ethernet1/1      D    00:04:02  V2
10    237.1.1.8       Ethernet1/1      D    00:04:02  V2
10    237.1.1.9       Ethernet1/1      D    00:04:02  V2
10    237.1.1.10      Ethernet1/1      D    00:04:02  V2
```

show ip igmp snooping mrouter

Displays multicast routers detected by Internet Group Management Protocol (IGMP) snooping.

Syntax

show ip igmp snooping mrouter [interface {ethernet *<chassis number>***/***port number>***|port-channel** *<LAG number>***}|vlan** *<VLAN number>***]**

where:

Parameter	Function
`interface ethernet` *chassis number***/***port number*	Displays multicast routers detected by IGMP Snooping on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface port-channel` *LAG number*	Displays multicast routers detected by IGMP Snooping on the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`vlan` *<VLAN number>*	Displays multicast routers detected by IGMP Snooping on the specified VLAN. The *VLAN number* is from 1 to 4094.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays multicast routers detected by IGMP Snooping:

```
Switch> show ip igmp snooping mrouter
Total entries: 1 (0 static, 1 dynamic)
VLAN   Interface                    IP-address      Expires
10     Ethernet1/1(dynamic)         77.88.99.111    00:04:00
```

show ip igmp snooping querier

Displays Internet Group Management Protocol (IGMP) snooping querier information.

Syntax

show ip igmp snooping querier [vlan *<VLAN number>***] [detail]**

where:

Parameter	Function
vlan *<VLAN number>*	Displays IGMP Snooping querier information for the specified VLAN. The *VLAN number* is from 1 to 4094.
detail	Displays detailed IGMP Snooping querier information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IGMP Snooping querier information:

```
Switch> show ip igmp snooping querier
IGMP Querier Information
Vlan    IP Address      Version      Expires    Port
10      10.1.1.0        3            00:00:27   Querier
```

```
Switch> show ip igmp snooping querier detail
IGMP Querier Information
Vlan    IP Address      Version      Expires    Port
10      10.1.1.0        3            00:00:24   Querier

IGMP Snooping Querier configuration for Vlan10
Snooping Querier version   : 3 (operational: 3)
Robustness variable        : 2 (operational: 2)
Query Interval             : 125 seconds (operational: 125 seconds)
Startup Query Count        : 2
Startup Query Interval     : 31 seconds
Last Member Query Count    : 2
Last Member Query Interval : 1000 milliseconds
Query Response Interval    : 10 seconds
Querier timeout            : 255 seconds (default, operational: 255
seconds)
```

show ip igmp snooping statistics

Displays Internet Groups Management Protocol (IGMP) snooping statistics.

Syntax

show ip igmp snooping statistics [global|vlan *<VLAN number>***]**

where:

Parameter	Function
global	Displays IGMP Snooping global statistics.
vlan *<VLAN number>*	Displays IGMP Snooping statistics for the specified VLAN. The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IGMP Snooping statistics:

```
Switch> show ip igmp snooping statistics vlan 10
Vlan10 IGMP snooping statistics, last reset: 00:00:32
  Packets received: 10
  IGMPv1 reports received: 0
  IGMPv2 reports received: 10
  IGMPv3 reports received: 0
  IGMPv1 queries received: 0
  IGMPv2 queries received: 0
        general queries received: 0
        group queries received: 0
  IGMPv3 queries received: 0
        general queries received: 0
        group queries received: 0
        group source queries received: 0
  IGMPv2 leaves received: 0
  Invalid reports received: 0
  Invalid queries received: 0
  IGMPv1 reports suppressed: 0
  IGMPv2 reports suppressed: 0
  IGMPv2 leaves suppressed: 0
  Queries originated: 0
  Packets sent to routers: 0
  STP TCN received: 0
  Report version mismatch: 0
  Unknown packets received: 0
  Checksum errors: 0, Packet length errors: 0
  Invalid v1 reports: 0, Invalid v2 reports: 0, Invalid v3 reports: 0
```

show ip interface

Displays interface status and configuration settings.

Syntax

show ip interface [<*interface name*>**|ethernet** <*chassis number*/*port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**|vlan** <*VLAN number*>**] [brief] [vrf {**<*VRF instance*>**|all|default}]**

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number*/*port number*	Displays ethernet interface configuration information. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays loopback interface configuration information. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays management interface configuration information. The *management interface* is 0.
vlan *VLAN number*	Displays Virtual LAN (VLAN) interface configuration information. The *VLAN number* is from 1 to 4094.
brief	Displays a short interface configuration summary.
vrf *VRF instance*	Displays configuration information for interfaces associated with the specified Virtual Routing and Forwarding (VRF) instance.
vrf all	Displays configuration information for interfaces associated with any VRF instance.
vrf default	Displays configuration information for interfaces associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a short interface configuration summary:

```
Switch> show ip interface brief
Interface          IP-Address       Admin-Status       Link-Status
Ethernet1/6        4.4.4.1             up                 up
Ethernet1/8        6.6.6.3             up                 up
Ethernet1/23        9.9.9.1            up                 up
Ethernet1/30       8.8.8.1             up               up
Ethernet1/36       1.0.0.1             up               up
Ethernet1/50       11.0.0.2            up               down
mgmt0             10.241.37.40         up                 up
Vlan2             2.2.2.1             up                down
Vlan10             182.124.0.10        up                   down
```

The following command displays interface configuration for management interface 0:

```
Switch> show ip interface mgmt 0

IP Interface Status for VRF (default)
IP Interface Status for VRF (management)
 mgmt0, Interface Status: link up/admin up
 IP address: 10.241.41.21, IP subnet: 10.241.41.0/25
 IP MTU:1500 bytes (using link MTU)
 IP icmp redirects: enabled
 IP icmp unreachables (except port): disabled
 IP icmp port-unreachable: enabled
```

The following command displays configuration information for all interfaces associated with the default VRF instance:

```
Switch> show ip interface vrf default

IP Interface Status for VRF (default)
 mgmt0, Interface Status: link up/admin up
 IP address: 10.241.41.21, IP subnet: 10.241.41.0/25
 IP MTU:1500 bytes (using link MTU)
 IP icmp redirects: enabled
 IP icmp unreachables (except port): disabled
 IP icmp port-unreachable: enabled

 loopback0, Interface Status: link up/admin up
 IP MTU:1500 bytes (using link MTU)
 IP icmp redirects: enabled
 IP icmp unreachables (except port): disabled
 IP icmp port-unreachable: enabled

 Vlan1, Interface Status: link up/admin up
 IP MTU:1500 bytes (using link MTU)
 IP icmp redirects: enabled
 IP icmp unreachables (except port): disabled
 IP icmp port-unreachable: enabled
...
```

show ip internal

Displays internal IP information.

Syntax

show ip internal {arp|interface [<*interface name*>**|ethernet** <*chassis number*>**/**<*port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**|port-channel** <*LAG number*>**|vlan** <*VLAN number*>**]|
route}**

where:

Parameter	Function
arp	Displays internal IP information for ARP entries.
interface *interface name*	The name of the interface.
interface ethernet *chassis number/port number*	Displays internal IP information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface loopback *loopback interface*	Displays internal IP information for the specified loopback interface. The *loopback interface* is from 0 to 7.
interface mgmt *management interface*	Displays internal IP information for the specified management interface. The *management interface* is 0.
interface port-channel *LAG number*	Displays internal IP information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
interface vlan *VLAN number*	Displays internal IP information for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
route	Displays the IP routing table.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays internal IP information for all interfaces:

```
Switch> show ip internal interface

Vlan1     Link encap:Ethernet  HWaddr a8:97:dc:de:25:01
          inet6 addr: fe80::aa97:dcff:fede:2501/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

internal0 Link encap:Ethernet  HWaddr 02:10:18:d1:34:aa
          inet6 addr: fe80::10:18ff:fed1:34aa/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:6 errors:0 dropped:1 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:484 (484.0 B)

internal1 Link encap:Ethernet  HWaddr 02:10:18:d1:34:ab
          inet6 addr: fe80::10:18ff:fed1:34ab/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:1548 (1.5 KiB)

...
```

show ip load-sharing

Displays global IP load balancing information.

Syntax

```
show ip load-sharing
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays global IP load balancing information:

```
Switch> show ip load-sharing

IP ECMP load sharing information:
universal-id (Random seed): 1431655765
Load-share mode: source-dest-ip source-dest-port
```

show ip ospf

Displays general Open Shortest Path First (OSPF) information.

Syntax

show ip ospf

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays general OSPF information:

```
Switch> show ip ospf

Routing Process "ospf 0" with ID 2.2.2.2
 Process uptime is 3 days 3 hours 31 minutes
 Process bound to VRF default
 Conforms to RFC2328, and RFC1583 Compatibility flag is disabled
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 Do not support Restarting
 SPF schedule delay initial 0 secs 500 msecs
 SPF schedule delay min 0 secs 500 msecs
 SPF schedule delay max 40 secs 0 msecs
 Refresh timer 10 secs
 Number of incomming current DD exchange neighbors 0/4
 Number of outgoing current DD exchange neighbors 0/4
 Initial LSA throttle delay 0 secs 0 msecs
 Minimum hold time for LSA throttle 5 secs 0 msecs
 Maximum wait time for LSA throttle 5 secs 0 msecs
 Minimum LSA arrival 1 secs 0 msecs
 Number of external LSA 0. Checksum 0x000000
 Number of opaque AS LSA 0. Checksum 0x000000
 Number of non-default external LSA 0
 External LSA database is unlimited.
 Number of LSA originated 1
 Number of LSA received 1524
 Number of areas attached to this router: 1
    Area 0.0.0.0 (BACKBONE)
        Number of interfaces in this area is 100(100)
        Number of fully adjacent neighbors in this area is 4
        Area has no authentication
        SPF algorithm last executed 75:29:40.323 ago
        SPF algorithm executed 8 times
        Number of LSA 11. Checksum 0x04480a
```

show ip ospf border-routers

Displays Open Shortest Path First (OSPF) routing table entries to an Area Border Router (ABR) and Autonomous System Boundary Router (ASBR).

Syntax

show ip ospf border-routers

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF routing table entries to an ABR or ASBR:

```
Switch> show ip ospf border-routers

OSPF process O VRF (default) internal Routing Table

Codes: i - Intra-area route, I - Inter-area route

i 2.2.2.2 [1] via 5.0.0.2, Ethernet1/33, ABR, Area 0.0.0.1
I 1.1.1.1 [2] via 5.0.0.2, Ethernet1/33, ASBR, Area 0.0.0.1
```

show ip ospf database

Displays the Open Shortest Path First (OSPF) database.

Syntax

show ip ospf [<*OSPF instance*>**] database [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
detail	Displays detailed OSPF database information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database:

```
Switch> show ip ospf database
 OSPF Router with ID (2.2.2.2) (Process ID 0 VRF default)

             Router Link States (Area 0.0.0.0)

Link ID         ADV Router      Age Seq#        CkSum  Link count
2.2.2.2         2.2.2.2          129 0x8000009e 0xe528 100
3.3.3.3         3.3.3.3         1241 0x8000009c 0xc093 100
4.4.4.4         4.4.4.4         1126 0x8000009f 0x1d0d 8

             Net Link States (Area 0.0.0.0)

Link ID         ADV Router      Age Seq#        CkSum
21.0.0.4        4.4.4.4          306 0x80000098 0x8cf4
22.0.0.4        4.4.4.4         1317 0x80000098 0x7f01
23.0.0.4        4.4.4.4          406 0x80000098 0x720d
...
34.0.0.4        4.4.4.4         1527 0x80000098 0x155b

             Summary Link States (Area 0.0.0.0)

Link ID         ADV Router      Age Seq#        CkSum  Route
4.0.0.0         2.2.2.2          129 0x80000001 0x054b 4.0.0.0/24
```

show ip ospf database *<link-state ID>*

Displays the Open Shortest Path First (OSPF) database entries for a specified LSA.

Syntax

show ip ospf [*<OSPF instance>***] database** *<link-state ID>* **[adv-router** *<advertising router ID>***|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for the OSPF router with link-state ID 10.243.79.34:

```
Switch> show ip ospf database 10.243.79.34
```

show ip ospf database adv-router

Displays the Open Shortest Path First (OSPF) database for an advertising router.

Syntax

show ip ospf [*<OSPF instance>***] database adv-router** *<advertising router ID>* **[detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
advertising router ID	The advertising router ID in IPv4 address format.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for the advertising router with ID 10.156.36.11:

```
Switch> show ip ospf database 10.156.36.11
```

show ip ospf database area

Displays the Open Shortest Path First (OSPF) database for a specified OSPF area.

Syntax

show ip ospf [*<OSPF instance>***] database area {***<area ID>***|**
*<area IPv4 address>***} [***<link-state ID>***] [adv-router** *<advertising router ID>***|**
self-originated] [detail]

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area ID	The ID of the OSPF area in decimal format. The *area ID* is from 1 to 4294967295.
area IPv4 address	The ID of the OSPF area in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
`adv-router` *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
`self-originated`	Displays LSAs originated from the local router.
`detail`	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for OSPF area '230':

```
Switch> show ip ospf database area 230
```

show ip ospf database asbr-summary

Displays a summary of the Open Shortest Path First (OSPF) database for Autonomous System Boundary Routers (ASBRs).

Syntax

show ip ospf [*<OSPF instance>* **] database asbr-summary [area {** *<area ID>* **|** *<area IPv4 address>* **}] [** *<link-state ID>* **] [adv-router** *<advertising router ID>* **|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a summary of the OSPF database for all ASBRs:

```
Switch> show ip ospf database asbr-summary
```

show ip ospf database database-summary

Displays a summary of the Open Shortest Path First (OSPF) database, including the types of link-state advertisements (LSAs) in each OSPF area and their total number.

Syntax

show ip ospf [*<OSPF instance>***] database database-summary**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a summary of the OSPF database:

```
Switch> show ip ospf database database-summary
```

show ip ospf database external

Displays the Open Shortest Path First (OSPF) database for external link-state advertisements (LSAs).

Syntax

show ip ospf [<*OSPF instance*>**] database external [ext-tag** <*external tag number*>**] [**<*link-state ID*>**] [adv-router** <*advertising router ID*>**| self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
ext-tag *external tag number*	Displays OSPF information for the specified external tag. The *external tag number* is from 1 to 4294967295.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for external LSAs:

```
Switch> show ip ospf database external
```

show ip ospf database network

Displays the Open Shortest Path First (OSPF) database for network link-state advertisements (LSAs).

Syntax

show ip ospf [<*OSPF instance*>**] database network [area {**<*area ID*>**|**<*area IPv4 address*>**}] [**<*link-state ID*>**] [adv-router** <*advertising router ID*>**|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for network LSAs:

```
Switch> show ip ospf database network
```

show ip ospf database nssa-external

Displays the Open Shortest Path First (OSPF) database for not-so-stubby area (NSSA) external link-state advertisements (LSAs).

Syntax

show ip ospf [<*OSPF instance*>**] database network [area {**<*area ID*>**|**<*area IPv4 address*>**}] [**<*link-state ID*>**] [adv-router** <*advertising router ID*>**|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for NSSA external LSAs:

```
Switch> show ip ospf database nssa-external
```

show ip ospf database opaque-area

Displays the Open Shortest Path First (OSPF) database for link area opaque link-state advertisements (LSAs).

Syntax

show ip ospf [<*OSPF instance*>**] database opaque-area [area {**<*area ID*>**|**<*area IPv4 address*>**}] [**<*link-state ID*>**] [adv-router** <*advertising router ID*>**|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for link area opaque LSAs:

```
Switch> show ip ospf database opaque-area
```

show ip ospf database opaque-as

Displays the Open Shortest Path First (OSPF) database for link autonomous system (AS) opaque link-state advertisements (LSAs).

Syntax

show ip ospf [*<OSPF instance>***] database opaque-as [area {***<area ID>***|***<area IPv4 address>***}] [***<link-state ID>***] [adv-router** *<advertising router ID>***|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for link AS opaque LSAs:

```
Switch> show ip ospf database opaque-as
```

show ip ospf database opaque-link

Displays the Open Shortest Path First (OSPF) database for link local opaque link-state advertisements (LSAs).

Syntax

show ip ospf [<*OSPF instance*>**] database opaque-link [area {**<*area ID*>**|**<*area IPv4 address*>**}] [**<*link-state ID*>**] [adv-router** <*advertising router ID*>**|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for link local opaque LSAs:

```
Switch> show ip ospf database opaque-link
```

show ip ospf database router

Displays the Open Shortest Path First (OSPF) database for router link-state advertisements (LSAs).

Syntax

show ip ospf [*<OSPF instance>***] database router [area {***<area ID>***|** *<area IPv4 address>***}] [***<link-state ID>***] [adv-router** *<advertising router ID>***| self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for router LSAs:

```
Switch> show ip ospf database router
```

show ip ospf database self-originated

Displays the Open Shortest Path First (OSPF) database for link-state advertisements (LSAs) originated from the local router.

Syntax

show ip ospf [<*OSPF instance*>**] database self-originated [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
detail	Displays detailed database information.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for LSAs originated from the local router:

```
Switch> show ip ospf database self-originated
```

show ip ospf database summary

Displays the Open Shortest Path First (OSPF) database for network summary link-state advertisements (LSAs).

Syntax

show ip ospf [<*OSPF instance*>**] database summary [area {**<*area ID*>**|**<*area IPv4 address*>**}] [**<*link-state ID*>**] [adv-router** <*advertising router ID*>**|self-originated] [detail]**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
area *area ID*	Displays OSPF database information for the OSPF area specified in decimal format. The *area ID* is from 1 to 4294967295.
area *area IPv4 address*	Displays OSPF database information for the OSPF area specified in IPv4 address format.
link-state ID	Link-state advertisement (LSA) communicates the router's local routing topology to all other routers in the local OSPF area. The value depends on the LSA type and must be entered in IPv4 address format.
adv-router *advertising router ID*	Displays all LSAs for the specified advertising router ID in IPv4 address format.
self-originated	Displays LSAs originated from the local router.
detail	Displays detailed database information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF database for summary LSAs:

```
Switch> show ip ospf database router
```

show ip ospf interface

Displays Open Shortest Path First (OSPF) interface related information.

Syntax

```
show ip ospf interface [<interface name>|ethernet <chassis number/port
number>|loopback <loopback interface>|vlan <VLAN number>] [brief]
[vrf {all|default}]
```

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number/port number*	Displays OSPF information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays OSPF information for the specified loopback interface. The *loopback interface* is an integer from 0 to 7.
vlan *VLAN number*	Displays OSPF information for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
brief	Displays a short interface information summary.
vrf all	Displays OSPF information for interfaces on all Virtual Routing and Forwarding (VRF) instances.
vrf default	Displays OSPF information for interfaces on the default VRF instance.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF interface related information:

```
Switch> show ip ospf interface ethernet 1/50
Ethernet1/50 is up, line protocol is up
  Internet Address 4.0.0.2/24, Area 0.0.0.1, MTU 1500
  Process ID 0, VRF (default), Router ID 2.2.2.2, Network Type BROADCAST,
Cost:
1
  Transmit Delay is 1 sec,  State DR, Priority 1
  Designated Router (ID) 2.2.2.2, Interface Address 4.0.0.2
  Backup Designated Router (ID) 1.1.1.1, Interface Address 4.0.0.1
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:10
  Neighbor Count is 1, Adjacent neighbor count is 1
  Hello received 18 sent 19, DD received 10 sent 5
  LS-Req received 2 sent 1, LS-Upd received 3 sent 8
  LS-Ack received 4 sent 2, Discarded 0
  No authentication

Switch#show ip ospf interface vlan 101
Vlan101 is up, line protocol is up
  Internet Address 45.0.1.2/24, Area 0.0.0.0, MTU 1500
  Process ID 0, VRF (default), Router ID 2.2.2.2, Network Type BROADCAST,
Cost:
1
  Transmit Delay is 1 sec,  State DR, Priority 1
  Designated Router (ID) 2.2.2.2, Interface Address 45.0.1.2
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:02
  Neighbor Count is 0, Adjacent neighbor count is 0
  Hello received 0 sent 27181, DD received 0 sent 0
  LS-Req received 0 sent 0, LS-Upd received 0 sent 0
  LS-Ack received 0 sent 0, Discarded 0
  No authentication
```

show ip ospf multi-area-adjacencies

Displays Open Shortest Path First (OSPF) multiple area link adjacencies.

Syntax

show ip ospf [*<OSPF instance>***] multi-area-adjacencies**

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF multiple area link adjacencies:

```
Switch> show ip ospf multi-area-adjacencies
Multi-area-adjacency link on interface Ethernet1/50 to neighbor 4.0.0.2
  Internet Address 4.0.0.1/24, Area 0.0.0.1, MTU 1500
  Process ID 0, Router ID 1.1.1.1, Network Type Point-To-Point, Cost: 1
  Transmit Delay is 1 sec, State Point-To-Point
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:10
  Neighbor Count is 1, Adjacent neighbor count is 1
  Hello received 2 sent 3, DD received 3 sent 4
  LS-Req received 1 sent 1, LS-Upd received 4 sent 3
  LS-Ack received 2 sent 3, Discarded 0
  No authentication
  Multi-area-adjacency link on interface Ethernet1/50 to neighbor 4.0.0.2
  Internet Address 4.0.0.1/24, Area 0.0.0.2, MTU 1500
  Process ID 0, Router ID 1.1.1.1, Network Type Point-To-Point, Cost: 1
  Transmit Delay is 1 sec, State Point-To-Point
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:03
  Neighbor Count is 1, Adjacent neighbor count is 1
  Hello received 2 sent 2, DD received 3 sent 4
  LS-Req received 1 sent 1, LS-Upd received 3 sent 2
  LS-Ack received 1 sent 1, Discarded 0
  No authentication
```

show ip ospf neighbors

Displays Open Shortest Path First (OSPF) neighbor information.

Syntax

show ip ospf [<*OSPF instance*>**] neighbors [interface** <*interface IPv4 address*>**|**<*interface name*>**|ethernet** <*chassis number***/***port number*>**|**
|loopback <*loopback interface*>**|mgmt** <*management interface*>**|**
|port-channel <*LAG number*>**|vlan** <*VLAN number*>**] [**<*neighbor ID*>**]**
[all|detail [all]|summary]

where:

Parameter	Function
OSPF instance	Displays OSPF information only for the specified OSPF instance. The *OSPF instance* is 0.
interface *interface IPv4 address*	Displays OSPF neighbor information for the specified interface in IPv4 address format.
interface *interface name*	Displays OSPF neighbor information for the specified interface by name.
interface ethernet *chassis number/port number*	Displays OSPF neighbor information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface loopback *loopback interface*	Displays OSPF neighbor information for the specified loopback interface. The *loopback interface* is from 0 to 7.
interface mgmt *management interface*	Displays OSPF neighbor information for the specified management interface. The *management interface* is 0.
interface port-channel *LAG number*	Displays OSPF neighbor information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
interface vlan *VLAN number*	Displays OSPF neighbor information for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
neighbor ID	The router ID of the neighbor in IPv4 address format.
all	Displays OSPF neighbor information, including neighbors that are in the DOWN link state.
detail	Displays detailed OSPF neighbor information.
summary	Displays a summary of the OSPF neighbors.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF neighbor information:

```
Switch> show ip ospf neighbors
Total number of full neighbors: 5

OSPF process O VRF(default):
Neighbor ID     Pri   State          Dead Time    Address
Interface
1.1.1.1          1   Full/Backup    00:00:33    4.0.0.1
Ethernet1/50

4.4.4.4          1   Full/DR        00:00:36    21.0.0.4        Vlan201

4.4.4.4          1   Full/DR        00:00:29    22.0.0.4        Vlan202

4.4.4.4          1   Full/DR        00:00:36    23.0.0.4        Vlan203

4.4.4.4          1   Full/DR        00:00:32    24.0.0.4        Vlan204
```

show ip ospf policy statistics redistribute

Displays Open Shortest Path First (OSPF) policy redistribution statistics.

Syntax

show ip ospf statistics redistribute {all|bgp|direct|
|static}

where:

Parameter	Function
all	Displays OSPF policy redistribution statistics for all processes and protocols.
bgp	Displays OSPF policy redistribution statistics for Border Gateway Protocol (BGP).
direct	Displays OSPF policy redistribution statistics for directly connected routes.
static	Displays OSPF policy redistribution statistics for IP static routes.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all OSPF policy redistribution statistics:

```
Switch> show ip ospf policy statistics redistribute all
OSPF process O: Redistribute: direct
  Total compared count : 8
  Total matched count: 8
```

show ip ospf retransmission-list

Displays a list of all link-state advertisements (LSAs) that are waiting to be resent to the specified Open Shortest Path First (OSPF) neighbor.

Syntax

show ip ospf retransmission-list *<neighbor ID>* **{***<interface name>***|
ethernet** *<chassis number/port number>***|loopback** *<loopback interface>***|
port-channel** *<LAG number>***|vlan** *<VLAN number>***}**

where:

Parameter	Function
neighbor ID	The router ID of the neighbor in IPv4 address format.
interface name	Displays LSAs waiting to be resent to the OSPF neighbor on the specified interface by name.
ethernet *chassis number/port number*	Displays LSAs waiting to be resent to the OSPF neighbor on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays LSAs waiting to be resent to the OSPF neighbor on the specified loopback interface. The *loopback interface* is from 0 to 7.
port-channel *LAG number*	Displays LSAs waiting to be resent to the OSPF neighbor on the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays LSAs waiting to be resent to the OSPF neighbor on the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the LSAs waiting to be resent to the OSPF neighbor with router ID 10.80.135.6 on the ethernet interface 1/12:

```
Switch> show ip ospf retransmission-list 10.80.135.6 ethernet 1/12
```

show ip ospf rib counters

Displays Open Shortest Path First (OSPF) Routing Information Base (RIB) statistics.

Syntax

show ip ospf rib counters

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays RIB statistics:

```
Switch> show ip ospf rib counters
 Global
    Routes received from RIB with invalid VR-Id: O
    Routes received from RIB with invalid VRF-Id: O

  OSPF VRF default
    Route ADDs sent to RIB: 104
    Failed while sending route ADDs to RIB: O
    Route DELETEs sent to RIB: O
    Failed while sending route DELETEs to RIB: O
    Route ADDs received from RIB: O
    Failed to process route ADDs received from RIB: O
    Route DELETEs received from RIB: O
    Failed to process route DELETEs received from RIB: O
```

show ip ospf route

Displays the Open Shortest Path First (OSPF) topology table.

Syntax

show ip ospf route [*<OSPF instance>***] [***<route IPv4 address>***[/***<prefix length>***]|summary]**

where:

Parameter	Function
OSPF instance	Displays the OSPF topology table only for the specified OSPF instance. The *OSPF instance* is 0.
route IPv4 address	The IPv4 address of the route.
prefix length	The length of the IPv4 network mask.
summary	Displays a summary of all routes.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the OSPF topology table:

```
Switch> show ip ospf route

OSPF process O:
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2

C  4.0.0.0/24 [1] is directly connected, Ethernet1/50, Area 0.0.0.1
C  21.0.0.0/24 [1] is directly connected, Vlan201, Area 0.0.0.0
C  22.0.0.0/24 [1] is directly connected, Vlan202, Area 0.0.0.0
C  23.0.0.0/24 [1] is directly connected, Vlan203, Area 0.0.0.0
C  24.0.0.0/24 [1] is directly connected, Vlan204, Area 0.0.0.0
O  31.0.0.0/24 [2] via 22.0.0.4, Vlan202, Area 0.0.0.0
                   via 23.0.0.4, Vlan203, Area 0.0.0.0
                   via 24.0.0.4, Vlan204, Area 0.0.0.0
                   via 21.0.0.4, Vlan201, Area 0.0.0.0
O  32.0.0.0/24 [2] via 22.0.0.4, Vlan202, Area 0.0.0.0
                   via 23.0.0.4, Vlan203, Area 0.0.0.0
                   via 24.0.0.4, Vlan204, Area 0.0.0.0
                   via 21.0.0.4, Vlan201, Area 0.0.0.0
O  33.0.0.0/24 [2] via 22.0.0.4, Vlan202, Area 0.0.0.0
                   via 23.0.0.4, Vlan203, Area 0.0.0.0
                   via 24.0.0.4, Vlan204, Area 0.0.0.0
                   via 21.0.0.4, Vlan201, Area 0.0.0.0
O  34.0.0.0/24 [2] via 22.0.0.4, Vlan202, Area 0.0.0.0
                   via 23.0.0.4, Vlan203, Area 0.0.0.0
                   via 24.0.0.4, Vlan204, Area 0.0.0.0
                   via 21.0.0.4, Vlan201, Area 0.0.0.0
C  45.0.1.0/24 [1] is directly connected, Vlan101, Area 0.0.0.0
```

show ip ospf statistics

Displays Open Shortest Path First (OSPF) statistics.

Syntax

show ip ospf [<*OSPF instance*>**] statistics**

where:

Parameter	Function
OSPF instance	Displays OSPF statistics only for the specified OSPF instance. The *OSPF instance* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF statistics:

```
Switch> show ip ospf statistics

OSPF Process ID O VRF default, Event statistics (cleared 75:38:55 ago)
   Router ID changes: 1
   DR elections: 101
   Older LSAs received: 1
   Neighbor state changes: 33
   Neighbor dead interval expirations: O
   Neighbor bad lsreqs: O
   Neighbor sequence number mismatches: O
   SPF computations: 13 full, O summary, O external

             LSA Type  Generated  Refreshed   Flushed   Aged out
             Router-LSA         2        160         0          0
            Network-LSA         1          0         0          0
            Summary-LSA       201          0         0          0
       ASBR-summary-LSA         0          0         0          0
        AS-external-LSA         0          0         0          0
            AS-NSSA-LSA         0          0         0          0
             Type-8 LSA         0          0         0          0
 Link-Local Opaque-LSA         0          0         0          0
 Area-Local Opaque-LSA         0          0         0          0
AS-external Opaque-LSA         0          0         0          0

 Following counters can not be reset:
   Packet SEND buffer: 2048 bytes
   LSA buffer: 2048 bytes
   Packet unused list: 6/200 packets
   LSA unused list: 9/200 LSAs
   DD packets in Q 0
   ACK packets in Q 0
   LSU packets in Q 0
```

show ip ospf summary-address

Displays Open Shortest Path First (OSPF) summary address redistribution information.

Syntax

show ip ospf [<*OSPF instance*>**] summary-address**

where:

Parameter	Function
OSPF instance	Displays OSPF summary address redistribution information only for the specified OSPF instance. The *OSPF instance* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF summary address redistribution information:

```
Switch> show ip ospf summary-address
OSPF Router with ID (2.2.2.2) (Process ID O VRF default)

Configured summary-address

55.0.1.0/24 Metric -1, tag O
```

show ip ospf traffic

Displays Open Shortest Path First (OSPF) traffic statistics.

Syntax

show ip ospf [<*OSPF instance*>**] traffic [**<*interface name*>**|**
ethernet <*chassis number***/***port number*>**|loopback** <*loopback interface*>**|**
port-channel <*LAG number*>**|vlan** <*VLAN number*>**] [vrf {all|**
default}]

where:

Parameter	Function
OSPF instance	Displays OSPF traffic statistics only for the specified OSPF instance. The *OSPF instance* is 0.
interface name	Displays OSPF traffic statistics for the specified interface by name.
ethernet *chassis number/port number*	Displays OSPF traffic statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays OSPF traffic statistics for the specified loopback interface. The *loopback interface* is from 0 to 7.
port-channel *LAG number*	Displays OSPF traffic statistics for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays OSPF traffic statistics for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
vrf all	Displays OSPF traffic statistics for all Virtual Routing and Forwarding (VRF) instances.
vrf default	Displays OSPF traffic statistics for the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF traffic statistics:

```
Switch> show ip ospf traffic

OSPF Process ID O VRF default, Packet Counters (cleared 75:39:36 ago)
  Total: 115536 in, 2729928 out
  Errors: drops in        O, drops out      O, hellos in       O,
          dbds in         O, lsreq in       O, lsu in          O,
          lsacks in       O, unknown in     O, unknown out     O,
          bad version     O, bad crc        O, invalid src     O,
          invalid dst     O, no nbr         O, passive         O,
          wrong area      O, pkt length     O, bad auth        O,

           hello        dbds       lsreq           lsus       acks
   In      108946         25           3           5943        619
   Out    2723349         22           5            626       5926
```

show ip ospf virtual-links

Displays Open Shortest Path First (OSPF) virtual links information.

Syntax

show ip ospf [<*OSPF instance*>**] virtual-links [brief]**

where:

Parameter	Function
OSPF instance	Displays OSPF virtual links information only for the specified OSPF instance. The *OSPF instance* is 0.
brief	Displays a short summary of the OSPF virtual links.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays OSPF virtual links information:

```
Switch> show ip ospf virtual-links
```

show ip prefix-list

Displays IPv4 prefix list information and statistics.

Syntax

show ip prefix-list [detail *<prefix list name>***|summary** *<prefix list name>***|***<prefix list name>* **[***<IPv4 address/prefix length>* **[first-match| |longer]|seq** *<sequence number>***]]**

where:

Parameter	Function
prefix list name	The name of the prefix list.
IPv4 address/prefix length	Displays the entries of the prefix list that match the specified IPv4 address and network mask length.
first-match	Displays the first entry of the prefix list that match the specified IPv4 address and network mask length.
longer	Displays all entries of the prefix list that are more specific than the selected IPv4 address and network mask length.
seq *sequence number*	Displays the entry with the specified sequence number from the selected prefix list. The *sequence number* is from 1 to 4294967295.
detail	Displays detailed IPv4 prefix list information.
summary	Displays a summary of all IPv4 prefix lists.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv4 prefix list information and statistics:

```
Switch# show ip prefix-list
ip prefix-list pf_1: 4 entries
    seq 5 permit 111.0.0.0/24
    seq 10 deny 100.45.0.0/16
    seq 15 deny 156.2.0.0/24 eq 25
    seq 20 permit any
ip prefix-list pf_2: 3 entries
    seq 5 deny 50.0.0.0/24 le 28
    seq 10 permit 80.0.0.0/24 ge 25
    seq 15 permit 85.0.0.64/24 ge 25 le 28
ip prefix-list pf_3: 1 entries
   Description: permit all
    seq 5 permit 0.0.0.0/0 le 32
```

show ip protocols

Displays parameters and statistics for the active routing protocol process.

Syntax

show ip protocols [bgp|ospf]

where:

Parameter	Function
bgp	Displays Border Gateway Protocol (BGP) parameters and statistics.
ospf	Displays Open Shortest Path First (OSPF) parameters and statistics.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays parameters and statistics for the active routing protocol process:

```
Switch> show ip protocols
Routing Protocol is "ospf O"
  Redistributing: direct O
  Routing for Networks:
    23.1.1.0/24
  Distance: (default is 110)

Routing Protocol is "bgp 3000"
  IGP synchronization is disabled
  Automatic route summarization is disabled
  Default local-preference applied to incoming route is 100
  Redistributing: static, ospf
  Neighbor(s):
  Address         AddressFamily  FiltIn  FiltOut  DistIn  DistOut
RouteMapIn  RouteMapOut  Weight
23.1.1.2        unicast     as_acl_1
rmap_1
24.1.1.2          unicast             as_acl_2
113.0.0.100        unicast
rmap_2                                        50
  Incoming Route Filter:
```

show ip route

Displays the IPv4 routing table.

Syntax

show ip route [vrf {all|default|management}] [<*route address*> **[/**<*prefix length*>**]|all|bgp|connected|next-hop** <*next-hop address*>**|ospf| static]**

where:

Parameter	Function
vrf all	Displays the IPv4 routing table associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays the IPv4 routing table associated with the default VRF instance.
vrf management	Displays the IPv4 routing table associated with the management VRF instance.
route address	The IPv4 address of the route.
prefix length	The length of the IPv4 network mask.
all	Displays all IPv4 routes.
bgp	Displays only Border Gateway Protocol (BGP) routes.
connected	Displays only directly connected routes.
next-hop *next-hop address*	Displays only routes with the specified next hop address in IPv4 address format.
ospf	Displays only Open Shortest Path First (OSPF) routes.
static	Displays only static routes.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the IPv4 routing table:

```
Switch> show ip route
Codes: C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area, D - DHCP
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       * - candidate default

IP Route Table for VRF "default"
C       23.1.1.0/24 is directly connected, Vlan23
C       24.1.1.0/24 is directly connected, Vlan24
S       45.0.0.0/8 [1/0] via 113.0.0.105, Vlan113
                   [1/0] via 24.1.1.2, Vlan24
O E1    57.61.0.0/24 [110/125] via 23.1.1.2, Vlan23, 00:02:20
B       100.0.0.0/24 [20/0] via 113.0.0.100, Vlan113, 00:05:54
B       100.0.1.0/24 [20/0] via 113.0.0.100, Vlan113, 00:05:54
C       113.0.0.0/24 is directly connected, Vlan113
O       116.0.0.0/24 [110/124] via 23.1.1.2, Vlan23, 00:09:21
O IA    117.1.1.1/32 [110/124] via 23.1.1.2, Vlan23, 00:09:11
B       145.45.0.0/16 [200/0] via 23.1.1.2, Vlan23, 00:03:29
O E2    190.20.20.20/32 [110/20] via 23.1.1.2, Vlan23, 00:05:07
C       192.168.1.2/32 is directly connected, loopback0

Gateway of last resort is not set
```

show ip route database

Displays the IPv4 routing table database.

Syntax

show ip route [vrf {all|default|management}] database
[all|bgp|connected|ospf|static]

where:

Parameter	Function
vrf all	Displays the IPv4 routing table database associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays the IPv4 routing table database associated with the default VRF instance.
vrf management	Displays the IPv4 routing table database associated with the management VRF instance.
all	Displays all IPv4 routes.
bgp	Displays only Border Gateway Protocol (BGP) routes.
connected	Displays only directly connected routes.
ospf	Displays only Open Shortest Path First (OSPF) routes.
static	Displays only static routes.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv4 routing table database:

```
Switch> show ip route database
Codes: C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area, D - DHCP
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       > - selected route, * - FIB route, p - stale info

IP Route Table for VRF "default"
C    *> 23.1.1.0/24 is directly connected, Vlan23
C    *> 24.1.1.0/24 is directly connected, Vlan24
S    *> 45.0.0.0/8 [1/0] via 113.0.0.105, Vlan113
      *>                  [1/0] via 24.1.1.2, Vlan24
B        45.0.0.0/8 [200/0] via 24.1.1.2, Vlan24, 00:00:01
O E1 *> 57.61.0.0/24 [110/125] via 23.1.1.2, Vlan23, 00:08:58
S    *> 100.0.0.0/24 [5/0] via 24.1.1.2, Vlan24
O       100.0.0.0/24 [110/124] via 23.1.1.2, Vlan23, 00:01:21
B        100.0.0.0/24 [20/0] via 113.0.0.100, Vlan113, 00:12:32
B    *> 100.0.1.0/24 [20/0] via 113.0.0.100, Vlan113, 00:12:32
C    *> 113.0.0.0/24 is directly connected, Vlan113
O     *> 116.0.0.0/24 [110/124] via 23.1.1.2, Vlan23, 00:15:59
O IA *> 117.1.1.1/32 [110/124] via 23.1.1.2, Vlan23, 00:15:49
O E2 *> 145.45.0.0/16 [110/20] via 23.1.1.2, Vlan23, 00:03:44
B         145.45.0.0/16 [200/0] via 23.1.1.2, Vlan23, 00:12:27
O E2 *> 190.20.20.20/32 [110/20] via 23.1.1.2, Vlan23, 00:11:45
C     *> 192.168.1.2/32 is directly connected, loopback0

Gateway of last resort is not set
```

show ip route interface

Displays IPv4 routing table for the specified interface.

Syntax

`show ip route [vrf {all|default|management}] interface`
`{` *<interface name>* **`|ethernet`** *<chassis number/port number>* **`|loopback`** *<loopback interface>* **`|mgmt`** *<management interface>* **`|port-channel`** *<LAG number>* **`|`**
`vlan` *<VLAN number>* **`}`**

where:

Parameter	Function
`vrf all`	Displays the IPv4 routing table associated with any Virtual Routing and Forwarding (VRF) instance.
`vrf default`	Displays the IPv4 routing table associated with the default VRF instance.
`vrf management`	Displays the IPv4 routing table associated with the management VRF instance.
interface name	Displays IPv4 routes for the specified interface by name.
`ethernet` *chassis number/port number*	Displays IPv4 routes for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`loopback` *loopback interface*	Displays IPv4 routes for the specified loopback interface. The *loopback interface* is from 0 to 7.
`mgmt` *management interface*	Displays IPv4 routes for the specified management interface. The *management interface* is 0.
`port-channel` *LAG number*	Displays IPv4 routes for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`vlan` *VLAN number*	Displays IPv4 routes for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the IPv4 routing table for ethernet interface 1/12:

```
Switch> show ip route interface ethernet 1/12
```

show ip route summary

Displays a summary of all IPv4 routes.

Syntax

`show ip route summary [vrf {all|default|management}]`

where:

Parameter	Function
vrf all	Displays a summary of IPv4 routes associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays a summary of IPv4 routes associated with the default VRF instance.
vrf management	Displays a summary of IPv4 routes associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a summary of all IPv4 routes:

```
Switch> show ip route summary
IPv4 routing table name is Default-IPv4-Routing-Table
IPv4 routing table maximum-paths   : 32
Total number of IPv4 routes     : 12
Total number of IPv4 paths      : 13
Route Source    Networks
connected       4
static          1
ospf            5
bgp             2
Total           12
FIB             12

ECMP statistics (active in ASIC):
--------------------------------
 Maximum IPv4 ECMP routes supported : 15872
 Total number of IPv4 ECMP routes   : 1
 Total number of IPv4 ECMP paths    : 2
 Number of routes with  2 ECMP paths: 1
```

show ip router-id vrf all

Displays the router ID.

Syntax

```
show ip router-id vrf all
```

where:

Parameter	Function
vrf all	Displays the router ID associated with all existing Virtual Routing and Forwarding (VRF) instances.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the router ID:

```
Switch> show ip router-id vrf all

VRF management
IP Router ID 10.241.41.21 (automatic)
```

show ip static-route

Displays static IPv4 route information.

Syntax

```
show ip static-route [[vrf {all|default|management}]
database]
```

where:

Parameter	Function
vrf all	Displays static routes associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays static routes associated with the default VRF instance.
vrf management	Displays static routes associated with the management VRF instance.
database	Displays static routes stored in the IP routing table.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays static IPv4 routes:

```
Switch> show ip static-route
IP Route Table for VRF "default"
S       122.0.0.0/24 [1/0] via 11.0.0.10, Ethernet1/38

Gateway of last resort is not set
```

show ip slp information

Displays Service Location Protocol (SLP) information.

Syntax

`show ip slp information`

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays SLP information:

```
Switch> show ip slp information
  Protocol Version: 2
       SLP State: enabled
       SLP Listening Port: 427
       SLP listening on interface: 3, IP address: 10.240.157.48
```

show ip slp user-agents

Displays the list of SLP known user agents.

Note: Up to eight known user agents can be configured.

Syntax

show ip slp user-agents

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays SLP user agents information:

```
Switch> show ip slp user-agents
List of UAs:
    IP Address: 10.0.0.7 on port Ethernet1/11, updated 00:05:33 seconds
ago
```

show ip slp counters

Displays Service Location Protocol (SLP) traffic statistics.

Syntax

```
show ip slp counters
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays SLP traffic statistics:

```
Switch> show ip slp counters
 SLP Send Counters              :    unicast      multicast
            SLP Da Adverts       :        0                0
            SLP Service Requests :        0                0
            SLP Service Replies  :        0                0
            SLP Service Ack      :        0                0
            SLP Attribute Requests :      0                0
            SLP Attribute Replies  :      0                0
            SLP SrvType Requests :        0                0
            SLP Service Replies  :        0                0
            SLP Srv Registrations :       0                0
            SLP Srv Deregistrations:      0                0
            SLP SA Adverts       :        0                0
            SLP Unknown          :        0                0

       SLP Receive Counters      :    unicast      multicast
            SLP Da Adverts       :        0                0
            SLP Service Requests :      448              698
            SLP Service Replies  :        0                0
            SLP Service Ack      :        0                0
            SLP Attribute Requests :      0                0
            SLP Attribute Replies  :      0                0
            SLP SrvType Requests :        0                0
            SLP Service Replies  :        0                0
            SLP Srv Registrations :       0                0
            SLP Srv Deregistrations:      0                0
            SLP SA Adverts       :        0                0
            SLP Unknown          :        0                0

       Scopes mismatch           :        0                0
       Wrong destination         :        0                0
       Invalid packets           :        0                0
```

show ip traffic

Displays IPv4 traffic statistics.

Syntax

show ip traffic

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv4 traffic statistics:

```
Switch> show ip traffic
IP Software Processed Traffic Statistics
----------------------------------------
Transmission and reception:
  Packets received:495983 sent:495545 forward:0     deliver:495983
  IpInHdrErrors       :0
  IpInAddrErrors      :0
  IpInUnknownProtos   :0
  IpInDiscards        :0
  IpOutDiscards       :0
  IpOutNoRoutes       :62152

Fragmentation and reassembly
  Packets FragCreats  :0      FragOKs :0       FragFails :0
  Packets ReasmRequests:0      ReasmOKs:0       ReasmFails:0

ICMP Software Processed Traffic Statistics
------------------------------------------
Transmission:
  Packets sent   :16     echo:3     reply:5     error:0
Reception:
  Packets received:16     echo:5     reply:3     error:0
```

show ip vrf

Displays Virtual Routing and Forwarding (VRF) instance information.

Syntax

show ip vrf [<*VRF name*>**]**

where:

Parameter	Function
VRF name	The name of the VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VRF instance information:

```
Switch> show ip vrf
VRF management, FIB ID 1
Router ID: 10.241.40.101 (automatic)
Interfaces:
  mgmt0
!
no VRF is defined.
```

show ipv6 adjacency

Displays IPv6 adjacency information.

Syntax

show ipv6 adjacency [<*interface name*>**|**<*source IPv6 address*>**|detail|
ethernet** <*chassis number***/***port number*>**|loopback** <*loopback interface*>**|mgmt**
<*management interface*>**|port-channel** <*LAG number*>**|static|vlan** <*VLAN
number*>**} [vrf {all|default|management}]**

where:

Parameter	Function
interface name	Displays IPv6 adjacency information for the specified interface by name.
source IPv6 address	Displays IPv6 adjacency information for the specified IPv6 source address.
detail	Displays detailed IPv6 adjacency information.
ethernet *chassis number/port number*	Displays IPv6 adjacency information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays IPv6 adjacency information for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays IPv6 adjacency information for the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays IPv6 adjacency information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
static	Displays IPv6 adjacency information for static routes.
vlan *VLAN number*	Displays IPv6 adjacency information for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
vrf all	Displays IPv6 adjacency information associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays IPv6 adjacency information associated with the default VRF instance.
vrf management	Displays IPv6 adjacency information associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 adjacency information:

```
Switch> show ipv6 adjacency
```

show ipv6 adjacency summary

Displays a summary of IPv6 adjacencies.

Syntax

show ipv6 adjacency summary [<*interface name*>**|ethernet** <*chassis number*>**/**<*port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**|port-channel** <*LAG number*>**|vlan** <*VLAN number*>**} [vrf {all|default|management}]**

where:

Parameter	Function
interface name	Displays IPv6 adjacency information for the specified interface by name.
ethernet *chassis number/port number*	Displays IPv6 adjacency information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays IPv6 adjacency information for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays IPv6 adjacency information for the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays IPv6 adjacency information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays IPv6 adjacency information for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.
vrf all	Displays IPv6 adjacency information associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays IPv6 adjacency information associated with the default VRF instance.
vrf management	Displays IPv6 adjacency information associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a summary of IPv6 adjacencies:

```
Switch> show ipv6 adjacency summary
```

show ipv6 bgp

Displays IPv6 Border Gateway Protocol (BGP) route information.

Syntax

show ipv6 bgp [<*IPv6 network address*>**[/**<*prefix length*> **[longer-prefixes]]] [vrf {all|default}]**

where:

Parameter	Function
IPv6 network address	The IPv6 network address.
prefix length	The IPv6 network mask length.
longer-prefixes	Displays IPv6 BGP route information for the specified network and any subnetworks with a prefix length equal to or greater than the prefix specified.
vrf all	Displays IPv6 BGP route associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays IPv6 BGP route associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 BGP route information:

```
Switch> show ipv6 bgp

BGP routing table information for VRF default address family IPV6 unicast
BGP table version is 24, local router ID is 1.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,
l - labeled
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete, |- multipath

    Network          Next Hop        Metric      LocPrf    Weight    Path
*>  3333::/64          ::
32768       ?
*>  aaa1::/64        9000::2                      100       0
300e
*>  aaa2::/64         9000::2       1234                              0
     300i
*>  6666::/64        9000::2                                0
300  {123}e


Total number of prefixes 4
MA_O5#
```

show ipv6 bgp dampening

Displays IPv6 Border Gateway Protocol (BGP) dampening information.

Syntax

**show ipv6 bgp dampening {dampened-paths|flap-statistics|
parameters}**

where:

Parameter	Function
dampened-paths	Displays all dampened paths.
flap-statistics	Displays flap statistics for IPv6 BGP routes.
parameters	Displays all dampening parameters.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all dampened paths:

```
Switch> show ipv6 bgp dampening dampened-paths
BGP routing table information for VRF default address family IPV6 unicast
BGP table version is 7, local router ID is 1.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,
l - labeled
              S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete, |- multipath

    Network          Next Hop        Metric     LocPrf   Weight   Path
*d  6666::/64        9000::2
0          300e

Total number of prefixes 1
```

show ipv6 bgp neighbors

Displays IPv6 Border Gateway Protocol (BGP) neighbors.

Syntax

show ipv6 bgp neighbors *<neighbor address>*

where:

Parameter	Function
neighbor address	The IPv4 or IPv6 address of the BGP neighbor.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 BGP neighbors:

```
Switch> show ipv6 bgp neighbors 9000::2

BGP neighbor is 9000::2, remote AS 300, local AS 400, external link
  BGP version 4, remote router ID 7.5.0.16
  BGP state = Established, up for 00:13:01
  Last read 00:00:02, hold time is 90, keepalive interval is 30 seconds
  Configured hold time is 15, keepalive interval is 5 seconds
  Neighbor capabilities:
    Route refresh: advertised and received (new)
    4-Octet ASN Capability: advertised
    Address family IPv4 Unicast: received
    Address family IPv4 Multicast: received
    Address family IPv6 Unicast: advertised and received
  Received 17010 messages, 0 notifications, 0 in queue
  Sent 16965 messages, 8 notifications, 0 in queue
  Route refresh request: received 0, sent 0
  Minimum time between advertisement runs is 30 seconds
 For address family: IPv6 Unicast
  BGP table version 13, neighbor version 13
  Index 2, Offset 0, Mask 0x4
  Inbound path policy configured
  Route map for incoming advertisements is *a
  1 accepted prefixes, maximum limit 6144
  Threshold for warning message 75(%)
  0 announced prefixes
...
```

show ipv6 bgp received-paths

Displays IPv6 Border Gateway Protocol (BGP) routes received from other neighbors.

Syntax

show ipv6 bgp received-paths

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 BGP routes received from other neighbors:

```
Switch> show ipv6 bgp received-paths
BGP table version is 3, local router ID is 1.1.1.2
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
*>i 6666::/64       9000::2                      100        O
300i

Total number of prefixes 1
```

show ipv6 bgp summary

Displays the status of all IPv6 Border Gateway Protocol (BGP) neighbors.

Syntax

`show ipv6 bgp summary [vrf {all|default}]`

where:

Parameter	Function
vrf all	Displays BGP connection status for neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP connection status for neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the connection status for all IPv6 BGP neighbors:

```
Switch> show ipv6 bgp summary
BGP router identifier 1.1.1.1, local AS number 400
BGP table version is 2
O BGP AS-PATH entries
O BGP community entries

Neighbor                                 V     AS MsgRcv MsgSen
TblVer InQ O
utQ Up/Down State/PfxRcd
2001::2                                  4    400    70    72    2
O
  0 01:09:28      O
2020::2                                  4    400     0     2    0
O
  0 00:00:41 OpenSent
9000::2                                  4    400   142   140    2
O
  0 01:09:26      1

Total number of neighbors 3

Total number of Established sessions 2
```

show ipv6 bgp unicast neighbors

Displays IPv6 unicast Border Gateway Protocol (BGP) neighbors.

Syntax

```
show ipv6 bgp unicast neighbors [<neighbor address>
[advertised-routes|flap-statistics|received-routes]]
[vrf {all|default}]
```

where:

Parameter	Function
neighbor address	The IPv4 or IPv6 address of the BGP neighbor.
advertised-routes	Displays BGP routes advertised to the specified neighbor.
flap-statistics	Displays flap statistics for the BGP routes received from the specified neighbor.
received-routes	Displays BGP routes received from the specified neighbor.
vrf all	Displays BGP neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 unicast BGP neighbors:

```
Switch> show ipv6 unicast bgp neighbors

BGP neighbor is 2001::2, remote AS 400, local AS 400, internal link
  BGP version 4, remote router ID 0.0.0.0
  BGP state = Active
  Last read 00:02:28, hold time is 180, keepalive interval is 60 seconds
  Received 71 messages, 1 notifications, 0 in queue
  Sent 73 messages, 0 notifications, 0 in queue
  Route refresh request: received 0, sent 0
  Minimum time between advertisement runs is 5 seconds
  Update source is loopback1
 For address family: IPv6 Unicast
  BGP table version 3, neighbor version 0
  Index 4, Offset 0, Mask 0x10
  Route-Reflector Client
  0 accepted prefixes, maximum limit 6144
  Threshold for warning message 75(%)
  0 announced prefixes

 Connections established 1; dropped 1
  TTL: 255, TTL Security hops: 0
Next connect timer due in 12 seconds
Last Reset: 00:02:28, due to BGP Notification received
Notification Error Message: (Hold Timer Expired/Unspecified Error
Subcode)

Update packets: 0
Update packets dropped: 0
 - Decode error drops: 0
 - Internal error drops: 0

 For address family: IPv6 Unicast
Withdraw prefixes: 0
Withdraw prefixes dropped: 0
 - Decode error drops: 0
 - Internal error drops: 0
NLRI prefixes: 0
NLRI prefixes dropped: 0
 - Decode error drops: 0
 - Internal error drops: 0
 - Route-map drops: 0
 - Filter drops: 0
 - AS-path loop drops: 0
 - Route reflector drops: 0
 - Next-hop drops: 0
 - Other drops: 0
...
```

```
...
 BGP neighbor is 2020::2, remote AS 400, local AS 400, internal link
  BGP version 4, remote router ID 1.1.1.2
  BGP state = OpenConfirm
  Last read OO:03:34, hold time is 180, keepalive interval is 60 seconds
  Received 1 messages, O notifications, O in queue
  Sent 5 messages, O notifications, O in queue
  Route refresh request: received O, sent O
  Minimum time between advertisement runs is 5 seconds
 For address family: IPv6 Unicast
  BGP table version 3, neighbor version O
  Index 10, Offset 1, Mask Ox4
  O accepted prefixes, maximum limit 6144
  Threshold for warning message 75(%)
  O announced prefixes

 Connections established O; dropped O
  TTL: 255, TTL Security hops: O
Local host: 2020::1, Local port: 43349
Foreign host: 2020::2, Foreign port: 179
Nexthop: 1.1.1.1
Nexthop global: 2020::1
Nexthop local: fe80::3a41:45ff:fe53:eeef
BGP connection: shared network

Update packets: O
Update packets dropped: O
 - Decode error drops: O
 - Internal error drops: O

 For address family: IPv6 Unicast
Withdraw prefixes: O
Withdraw prefixes dropped: O
 - Decode error drops: O
 - Internal error drops: O
NLRI prefixes: O
NLRI prefixes dropped: O
 - Decode error drops: O
 - Internal error drops: O
 - Route-map drops: O
 - Filter drops: O
 - AS-path loop drops: O
 - Route reflector drops: O
 - Next-hop drops: O
 - Other drops: O
```

show ipv6 bgp unicast neighbors routes

Displays IPv6 unicast Border Gateway Protocol (BGP) routes received or advertised to or from the specified neighbor.

Syntax

show ipv6 bgp unicast neighbors *<neighbor address>* **routes**
[advertised|dampened|received] [vrf {all|default}]

where:

Parameter	Function
neighbor address	The IPv4 or IPv6 address of the BGP neighbor.
advertised	Displays BGP routes advertised to the neighbor.
dampened	Displays dampened BGP routes received from the neighbor.
received	Displays BGP routes received from the neighbor.
vrf all	Displays BGP routes for neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays BGP routes for neighbors associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP routes received or advertised to or from the neighbor with IPv4 address 10.254.22.36:

```
Switch> show ipv6 bgp neighbors 10.254.22.36 routes
```

show ipv6 dhcp relay

Displays Dynamic Host Configuration Protocol version 6 (DHCPv6) relay service configuration and statistics.

Syntax

show ipv6 dhcp relay [address [interface {ethernet [<*chassis number*/*port number*>**]|vlan [**<*VLAN number*>**]}] [vrf {**<*VRF instance*>**| all|default}]**

where:

Parameter	Function
address	Displays configured DHCPv6 addresses.
interface ethernet	Displays configured DHCPv6 address on all ethernet interfaces.
chassis number/*port number*	Displays configured DHCPv6 address on the specified ethernet interface. The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* depends on the switch type.
interface vlan	Displays configured DHCPv6 addresses on all Virtual LAN (VLAN) interfaces.
VLAN number	Displays configured DHCPv6 addresses on the specified VLAN interface. The *VLAN number* is from 1 to 4094.
vrf *VRF instance*	Displays DHCPv6 information for the specified Virtual Routing and Forwarding (VRF) instance.
vrf all	Displays DHCPv6 information for all the VRF instances.
vrf default	Displays DHCPv6 information for the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the DHCPv6 configuration:

```
Switch> show ipv6 dhcp relay

DHCPv6 relay service is Enabled.
Helper addresses are configured on the following interfaces:
Interface            Relay Address                    Output Interface

--------             ------------                     ----------------

Ethernet1/20         2004::101
Ethernet1/20         2005::4
Ethernet1/20         fe80::1234
Ethernet1/20         fe80::124                        Vlan1
```

show ipv6 forwarding

Displays IPv6 forwarding status.

Syntax

show ipv6 forwarding

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 forwarding status:

```
Switch> show ipv6 forwarding

IPv6 forwarding is on.
```

show ipv6 interface

Displays IPv6 interface status and configuration settings.

Syntax

show ipv6 interface {*<interface name>***|ethernet** *<chassis number/port number>***|loopback** *<loopback interface>***|mgmt** *<management interface>***|vlan** *<VLAN number>***} brief**

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number/port number*	Displays ethernet interface configuration information. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays loopback interface configuration information. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays management interface configuration information. The *management interface* is 0.
vlan *VLAN number*	Displays Virtual LAN (VLAN) interface configuration information. The *VLAN number* is from 1 to 4094.
brief	Displays a short interface configuration summary.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays interface configuration for management interface 0:

```
Switch> show ipv6 interface mgmt 0 brief

mgmt0                         [up/up]
    fe80::aa97:dcff:fede:2500
```

show ipv6 nd interface

Displays IPv6 neighbor discovery (ND) information for the specified interface.

Syntax

show ipv6 nd interface [<*interface name*>**|ethernet** <*chassis number***/***port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**|port-channel** <*LAG number*>**|vlan** <*VLAN number*>**]**

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number/port number*	Displays neighbor discovery (ND) information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays neighbor discovery (ND) information for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays neighbor discovery (ND) information for the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays neighbor discovery (ND) information for the specified Link Aggregation Group (LAG). The *LAG number* is from 0 to 4096.
vlan *VLAN number*	Displays neighbor discovery (ND) information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 ND information for all interfaces:

```
Switch> show ipv6 nd interface

Interface mgmt0, Interface status: protocol-up/link-up/admin-up
  IPv6 address: fe80::aa97:dcff:fede:2500
  IPv6 interface DAD attempts: 1
  ICMPv6 active timers:
      Last Router-Advertisement sent: never
      Next Router-Advertisement sent in: 0 secs
  Router-Advertisement parameters:
      Suppress RAs: true
      Periodic interval: 0 secs
      Minimum interval: 198 secs
      Maximum interval: 600 secs
      Send 'Managed Address Configuration' flag: false
      Send 'Other Configuration' flag: false
      Send 'Current Hop Limit' field: 64 hops
      Send 'MTU' option value: 1500 bytes
      Send 'Router Lifetime' field: 1800 secs
      Send 'Reachable Time' field: 0 ms
      Send 'Retrans Timer' field: 0 ms
      Prefix parameters:
        Valid-lifetime: 2592000, preferred-lifetime: 604800
        Off-link flag: false, no-autoconf flag: false
        Advertised prefixes:
  Neighbor-Solicitation parameters:
      NS retransmit interval: 1 sec
  ICMPv6 error message parameters:
      Send redirects: true
```

show ipv6 neighbor

Displays IPv6 neighbor information.

Syntax

```
show ipv6 neighbor [<interface name>|<neighbor address>|detail|
ethernet <chassis number/port number>|loopback <loopback interface>|
mgmt <management interface>|port-channel <LAG number>|static|
vlan <VLAN number>] [vrf {all|default|management}]
```

where:

Parameter	Function
interface name	Displays information for IPv6 neighbors on the specified interface by name.
neighbor address	Displays IPv6 information for the specified neighbor in IPv6 address format.
detail	Displays detailed IPv6 neighbor information.
ethernet *chassis number/port number*	Displays information about IPv6 neighbors on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays information about IPv6 neighbors on the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays information about IPv6 neighbors on the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays information about IPv6 neighbors on the specified Link Aggregation Group (LAG). The *LAG number* is from 0 to 4096.
static	Displays information for static IPv6 neighbors.
vlan *VLAN number*	Displays information about IPv6 neighbors on the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
vrf all	Displays information for IPv6 neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays information for IPv6 neighbors associated with the default VRF instance.
vrf management	Displays information for IPv6 neighbors associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 neighbor information:

```
Switch> show ipv6 neighbor

R - Reachable, I - Incomplete, S - Stale, F - Failed, P - Probe,
D - Delay, PR - Permanent

Flags: (D) - Static neighbors attached to down interface
Flags: (N) - Static neighbors with null phy interface

IPv6 Neighbor Table for context default
Total number of entries:2
Address                   Age       MAC Address     Source  Interface     State
2004::101                 00:00:06  0000.34b0.73ec  icmpv6  Ethernet1/20  R
fe80::200:34ff:feb0:73ec  00:00:01  0000.34b0.73ec  icmpv6  Ethernet1/20  D
```

show ipv6 neighbor summary

Displays summary adjacency information about the specified IPv6 neighbor.

Syntax

show ipv6 neighbor summary [*<interface name>***|ethernet** *<chassis number>***/***port number>***|loopback** *<loopback interface>***|mgmt** *<management interface>***|port-channel** *<LAG number>***|vlan** *<VLAN number>***] [vrf {all|default|management}]**

where:

Parameter	Function
interface name	Displays summary adjacency information about IPv6 neighbors on the specified interface by name.
ethernet *chassis number/port number*	Displays summary adjacency information about IPv6 neighbors on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays summary adjacency information about IPv6 neighbors on the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays summary adjacency information about IPv6 neighbors on the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays summary adjacency information about IPv6 neighbors on the specified Link Aggregation Group (LAG). The *LAG number* is from 0 to 4096.
vlan *VLAN number*	Displays summary adjacency information about IPv6 neighbors on the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
vrf all	Displays summary adjacency information for neighbors associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays summary adjacency information for neighbors associated with the default VRF instance.
vrf management	Displays summary adjacency information for neighbors associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays summary IPv6 neighbor adjacency information:

```
Switch> show ipv6 neighbor summary

IPv6 Neighbors Table - Adjacency Summary

  Resolved   : 2
  Incomplete : 0
  Unknown    : 0
  Total      : 2
```

show ipv6 prefix-list

Displays IPv6 prefix list information and statistics.

Syntax

show ipv6 prefix-list [detail *<prefix list name>***|summary** *<prefix list name>***|***<prefix list name>* **[***<IPv6 address/prefix length>* **[first-match| |longer]|seq** *<sequence number>***]]**

where:

Parameter	Function
prefix list name	The name of the prefix list.
IPv6 address/prefix length	Displays the entries of the prefix list that match the specified IPv6 address and network mask length.
first-match	Displays the first entry of the prefix list that match the specified IPv6 address and network mask length.
longer	Displays all entries of the prefix list that are more specific than the selected IPv6 address and network mask length.
seq *sequence number*	Displays the entry with the specified sequence number from the selected prefix list. The *sequence number* is from 1 to 4294967295.
detail	Displays detailed IPv6 prefix list information.
summary	Displays a summary of all IPv6 prefix lists.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 prefix list information and statistics:

```
Switch# show ipv6 prefix-list

ipv6 prefix-list aaaa: 1 entries
    seq 5 deny 2003::/64 le 128
```

show ipv6 route

Displays the IPv6 routing table.

Syntax

show ipv6 route [vrf {all|default|management}] [*<route address>***[/***<prefix length>***]|all|bgp|connected|next-hop** *<next-hop address>***|static]**

where:

Parameter	Function
vrf all	Displays the IPv6 routing table associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays the IPv6 routing table associated with the default VRF instance.
vrf management	Displays the IPv6 routing table associated with the management VRF instance.
route address	The IPv6 address of the route.
prefix length	The length of the IPv6 network mask.
all	Displays all IPv6 routes.
bgp	Displays only Border Gateway Protocol (BGP) routes.
connected	Displays only directly connected routes.
next-hop *next-hop address*	Displays only routes with the specified next hop address in IPv6 address format.
static	Displays only static routes.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the IPv6 routing table:

```
Switch> show ipv6 route

IPv6 Routing Table
Codes: C - connected, S - static, R - RIP, O - OSPF
       IA - OSPF inter area, E1 - OSPF external type 1,
       E2 - OSPF external type 2, B - BGP
Timers: Uptime

IP Route Table for VRF "default"
C      2001::/64 via ::, Vlan1, 01:14:21
C      2004::/64 via ::, Ethernet1/20, 01:53:25
C      fe80::/64 via ::, Vlan1, 02:01:50
C      fe80::/64 via ::, Ethernet1/20, 02:01:50
```

show ipv6 route database

Displays the IPv6 routing table database.

Syntax

```
show ipv6 route [vrf {all|default|management}] database
[all|bgp|connected|static]
```

where:

Parameter	Function
vrf all	Displays the IPv6 routing table database associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays the IPv6 routing table database associated with the default VRF instance.
vrf management	Displays the IPv6 routing table database associated with the management VRF instance.
all	Displays all IPv6 routes.
bgp	Displays only Border Gateway Protocol (BGP) routes.
connected	Displays only directly connected routes.
static	Displays only static routes.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 routing table database:

```
Switch> show ipv6 route database

IPv6 Routing Table
Codes: C - connected, S - static, R - RIP, O - OSPF,
       IA - OSPF inter area, E1 - OSPF external type 1,
       E2 - OSPF external type 2, B - BGP
       > - selected route, * - FIB route, p - stale info
Timers: Uptime

IP Route Table for VRF "default"
C   *> 2001::/64 via ::, Vlan1, 01:14:29
C   *> 2004::/64 via ::, Ethernet1/20, 01:53:33
C   *> fe80::/64 via ::, Vlan1, 01:14:29
C   *> fe80::/64 via ::, Ethernet1/20, 01:53:33
```

show ipv6 route interface

Displays IP routing table for the specified interface.

Syntax

**show ipv6 route [vrf {all|default|management}] interface
{**<*interface name*>**|ethernet** <*chassis number*/*port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**|port-channel** <*LAG number*>**|
vlan** <*VLAN number*>**}**

where:

Parameter	Function
vrf all	Displays the IPv6 routing table associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays the IPv6 routing table associated with the default VRF instance.
vrf management	Displays the IPv6 routing table associated with the management VRF instance.
interface name	Displays IPv6 routes for the specified interface by name.
ethernet *chassis number*/*port number*	Displays IPv6 routes for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays IPv6 routes for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays IPv6 routes for the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays IPv6 routes for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays IPv6 routes for the specified Virtual LAN (VLAN) interface. The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the IPv6 routing table for ethernet interface 1/12:

```
Switch> show ipv6 route interface ethernet 1/12
```

show ipv6 route summary

Displays a summary of all IPv6 routes.

Syntax

`show ipv6 route summary [vrf {all|default|management}]`

where:

Parameter	Function
vrf all	Displays a summary of IPv6 routes associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays a summary of IPv6 routes associated with the default VRF instance.
vrf management	Displays a summary of IPv6 routes associated with the management VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a summary of all IPv6 routes:

```
Switch> show ipv6 route summary

IPv6 routing table name is Default-IPv6-Routing-Table
IPv6 routing table maximum-paths   : 32
Total number of IPv6 routes     : 2
Total number of IPv6 paths      : 2
Route Source    Networks
connected       2
Total           2
FIB             2

ECMP statistics (active in ASIC):
---------------------------------
 Maximum IPv6 ECMP routes supported : 6144
 Total number of IPv6 ECMP routes   : 0
 Total number of IPv6 ECMP paths    : 0
```

show ipv6 static-route

Displays static IPv6 route information.

Syntax

```
show ipv6 static-route [[vrf {all|default|management}]
database]
```

where:

Parameter	Function
vrf all	Displays static IPv6 routes associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays static IPv6 routes associated with the default VRF instance.
vrf management	Displays static IPv6 routes associated with the management VRF instance.
database	Displays static IPv6 routes stored in the IPv6 routing table.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays static IPv6 routes:

```
Switch> show ipv6 static-route

IP Route Table for VRF "default"
S     4000::/64 [1/0] via 2004::101, Ethernet1/20, 00:00:03
```

show ipv6 traffic

Displays IPv6 traffic statistics.

Syntax

show ipv6 traffic

Modes

- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 traffic statistics:

```
Switch# show ipv6 traffic
```

show lacp counters

Displays Link Aggregation Control Protocol (LACP) statistics.

Syntax

show lacp counters [interface port-channel *<LAG number>***]**

where:

Parameter	Function
interface port-channel *LAG number or range*	Displays LACP statistics for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP statistics:

```
Switch> show lacp counters

                 LACPDUs          Marker       Marker Respnose    LACPDUs
Port          Sent    Recv    Sent    Recv    Sent    Recv       Pkts Err
-------------------------------------------------------------------------------
po1000
Ethernet1/1    31      31      0       0       0       0          0
Ethernet1/2    32      31      0       0       0       0          0

po2000
Ethernet1/9    35      36      0       0       0       0          0
Ethernet1/10   36      34      0       0       0       0          0
Ethernet1/11   42      37      0       0       0       0          0
Ethernet1/12   41      36      0       0       0       0          0
```

show lacp interface ethernet

Displays Link Aggregation Control Protocol (LACP) interface configuration.

Syntax

show lacp interface ethernet *<chassis number/port number>*

where:

Parameter	Function
chassis number/port number	Displays LACP information for the specified ethernet interface. The *chassis number* is 1.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP configuration for ethernet interface 1/12:

```
Switch> show lacp interface ethernet 1/9

% Interface Ethernet1/9 is up
%   channel-group is 2000 port-channel is po2000
%   PDUs sent: 374
%   PDUs rcvd: 375
%   Markers sent: 0
%   Markers rcvd: 0
%   Markers response sent: 0
%   Markers response rcvd: 0
%   Unknown packets rcvd: 0
% Lag Id: [(8000, a8-97-dc-f7-d5-00, 07d0, 8000, 005a),(8000,
08-17-f4-c3-df-00,
 0040, 8000, 005a)]
% Local Port: Ethernet1/9   MAC Address=a8-97-dc-f7-d5-00
%   System Identifier=0x8000, a8-97-dc-f7-d5-00
%   Port Identifier=0x8000, 0x005a
%   Operational key=2000
%   LACP_Activity=Active
%   LACP_Timeout=Long Timeout (30s)
%   Synchronization=IN_SYNC
%   Collecting=True
%   Distributing=True
% Actor Admin State=(ACT:1 TIM:0 AGG:1 SYN:0 COL:0 DIS:0 DEF:1 EXP:0)
% Actor Oper  State=(ACT:1 TIM:0 AGG:1 SYN:1 COL:1 DIS:1 DEF:0 EXP:0)
% Neighbor: 90    MAC Address=08-17-f4-c3-df-00
%   System Identifier=0x8000, 08-17-f4-c3-df-00
%   Port Identifier=0x8000, 0x005a
%   Operational key=64
%   LACP_Activity=Active
%   LACP_Timeout=Long Timeout (30s)
%   Synchronization=IN_SYNC
%   Collecting=True
%   Distributing=True
% Partner Admin State=(ACT:0 TIM:0 AGG:1 SYN:0 COL:0 DIS:0 DEF:1 EXP:0)
% Partner Oper  State=(ACT:1 TIM:0 AGG:1 SYN:1 COL:1 DIS:1 DEF:0 EXP:0)
```

show lacp internal event-history

Displays Link Aggregation Control Protocol (LACP) event logs.

Syntax

show lacp internal event-history {buffer-size all|errors|
interface {ethernet *<chassis number/port number>***|port-channel**
*<LAG number or range>***}|msgs}**

where:

Parameter	Function
buffer-size all	Displays the buffer size for all types of LACP events.
errors	Displays LACP error logs.
interface ethernet *chassis number/port number*	Displays LACP event logs for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number or range*	Displays LACP event logs for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
msgs	Displays LACP message logs.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP message logs:

```
Switch> show lacp internal event-history msgs

Event: MESSAGES, length:77, at 884329 usecs after Fri Jan  8 04:58:39 2016
 [mgmt0] @ lacp_nsm_recv_interface_add(79):
 [MSG_RECV]: Add interface mgmt0

Event: MESSAGES, length:77, at 884558 usecs after Fri Jan  8 04:58:39 2016
 [Vlan1] @ lacp_nsm_recv_interface_add(79):
 [MSG_RECV]: Add interface Vlan1

Event: MESSAGES, length:89, at 884654 usecs after Fri Jan  8 04:58:39 2016
 [Ethernet1/1] @ lacp_nsm_recv_interface_add(79):
 [MSG_RECV]: Add interface Ethernet1/1

Event: MESSAGES, length:89, at 884768 usecs after Fri Jan  8 04:58:39 2016
 [Ethernet1/2] @ lacp_nsm_recv_interface_add(79):
 [MSG_RECV]: Add interface Ethernet1/2

Event: MESSAGES, length:89, at 884871 usecs after Fri Jan  8 04:58:39 2016
 [Ethernet1/3] @ lacp_nsm_recv_interface_add(79):
 [MSG_RECV]: Add interface Ethernet1/3

Event: MESSAGES, length:89, at 884972 usecs after Fri Jan  8 04:58:39 2016
 [Ethernet1/4] @ lacp_nsm_recv_interface_add(79):
 [MSG_RECV]: Add interface Ethernet1/4
...
```

The following command displays LACP buffer size:

```
Switch> show lacp internal event-history buffer-size all

Name      Current    Max
ERRORS    0          8388608
MESSAGES  17589      8388608
EVENT_SM  0          8388608
```

show lacp internal info

Displays Link Aggregation Control Protocol (LACP) internal information.

Syntax

`show lacp internal info {aggregator|all|interface {ethernet` *<chassis number/port number>***`|port-channel`** *<LAG number or range>* **`[detail fsmlog|mem-dump]}}`**

where:

Parameter	Function
`aggregator`	Displays information about the LACP aggregator.
`all`	Displays all LACP internal information.
`interface ethernet` *chassis number/port number*	Displays LACP internal information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface port-channel` *LAG number or range*	Displays LACP internal information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`detail fsmlog`	Displays detailed LACP state-machine information.
`mem-dump`	Displays LACP memory dump information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP internal aggregator information:

```
Switch> show lacp internal info aggregator

Static and None Aggregator:
    Aggregator po100, member num 2
        Member interface Ethernet1/49 ,locates at 0.
        Member interface Ethernet1/50 ,locates at 1.
    Aggregate po100's vLAG configuration
        vLAG global enable = True
        vLAG instance id = 0
        vLAG instance enable = False
        vLAG tier id = 0
        vLAG's LACP actor system mac = 0x00:00:00:00:00:00
        vLAG's LACP partner key = 0x0
        vLAG's LACP partner priority = 0x0
        vLAG's LACP partner system mac = 0x00:00:00:00:00:00
        vLAG's LACP actor priority = 0x0

    Aggregator po1000, member num 2
        Member interface Ethernet1/1 ,locates at 0.
        Member interface Ethernet1/2 ,locates at 1.
    Aggregate po1000's vLAG configuration
        vLAG global enable = True
        vLAG instance id = 1
        vLAG instance enable = True
        vLAG tier id = 1
        vLAG's LACP actor system mac = 0x08:17:f4:c3:dd:01
        vLAG's LACP partner key = 0x0
        vLAG's LACP partner priority = 0x0
        vLAG's LACP partner system mac = 0x00:00:00:00:00:00
        vLAG's LACP actor priority = 0x0

    Aggregator po2000, member num 4
        Member interface Ethernet1/9 ,locates at 0.
        Member interface Ethernet1/10 ,locates at 1.
        Member interface Ethernet1/11 ,locates at 2.
        Member interface Ethernet1/12 ,locates at 3.
    Aggregate po2000's vLAG configuration
        vLAG global enable = True
        vLAG instance id = 64
        vLAG instance enable = True
        vLAG tier id = 1
        vLAG's LACP actor system mac = 0x08:17:f4:c3:dd:01
        vLAG's LACP partner key = 0x0
        vLAG's LACP partner priority = 0x0
        vLAG's LACP partner system mac = 0x00:00:00:00:00:00
        vLAG's LACP actor priority = 0x0

LACP Aggregator:
```

show lacp min-links

Displays Link Aggregation Control Protocol (LACP) minimum links information.

Syntax

show lacp min-links [interface port-channel *<LAG number>***]**

where:

Parameter	Description
interface port-channel	Displays LACP minimum links information for the specified Link Aggregation Group (LAG).
LAG number	The *LAG number* is an integer from 1 to 4096.

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command LACP minimum links information:

```
Switch> show lacp min-links
```

show lacp neighbor

Displays Link Aggregation Control Protocol (LACP) neighbor information.

Syntax

show lacp neighbor [interface port-channel *<LAG number>***]**

where:

Parameter	Function
interface port-channel	Displays LACP neighbor information for the specified Link Aggregation Group (LAG).
LAG number	The *LAG number* is an integer from 1 to 4096.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP neighbor information:

```
Switch> show lacp neighbor

Flags:  S - Device is sending Slow LACPDUs F - Device is sending Fast LACPDUs
        A - Device is in Active mode      P - Device is in Passive mode
po1000 neighbors
Partner's information
          Partner                 Partner                   Partner
Port      System ID               Port Number     Age       Flags
Ethernet1/1 32768,74-99-75-d3-ce-00 0x1            453       SA

          LACP Partner            Partner                   Partner
          Port Priority           Oper Key                  Port State
          32768                   0x3e8                     0x3d

Partner's information
          Partner                 Partner                   Partner
Port      System ID               Port Number     Age       Flags
Ethernet1/2 32768,74-99-75-d3-ce-00 0x2            453       SA

          LACP Partner            Partner                   Partner
          Port Priority           Oper Key                  Port State
          32768                   0x3e8                     0x3d
...
```

show lacp nsm internal info

Displays Link Aggregation Control Protocol (LACP) Network Service Module (NSM) information.

Syntax

show lacp nsm internal info {global|interface {ethernet *<chassis number>/port number>***|port-channel** *<LAG number or range>***}** **{aggregation|nsm [mem-dump]}}**

where:

Parameter	Function
`global`	Displays LACP NSM global information.
`interface ethernet` *chassis number/port number*	Displays LACP NSM information for the specified ethernet interface. The *chassis number* is 1.
`interface port-channel` *LAG number or range*	Displays LACP NSM information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`aggregation`	Displays LACP aggregation information.
`nsm`	Displays LACP NSM information.
`mem-dump`	Displays LACP NSM memory dump information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP NSM information:

```
Switch> show lacp nsm internal info global

System allows the maximum number is 72 for aggregator
Aggregator allows the largest member number is 32
System has 1 aggregator(s)
```

Note: The command show output differs depending on the switch type.

show lacp port-channel

Displays Link Aggregation Control Protocol (LACP) Link Aggregation Groups (LAGs) information.

Syntax

show lacp port-channel [interface port-channel *<LAG number or range>***]**

where:

Parameter	Function
`interface port-channel` *LAG number or range*	Displays LACP information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP LAG information:

```
Switch> show lacp port-channel

po1000
  System Mac=a8-97-dc-dd-ed-00
  Local System Identifier=0x8000,a8-97-dc-dd-ed-00
  Admin key=0x3e8
  Operational key=0x3e8
  Partner System Identifier=0x8000,74-99-75-d3-ce-00
  Operational key=0x3e8
  Max delay=5
  Aggregate or individual=0(aggregate)
  Member Port List=1,2
po2000
  System Mac=a8-97-dc-dd-ed-00
  Local System Identifier=0x8000,a8-97-dc-dd-ed-00
  Admin key=0x7d0
  Operational key=0x7d0
  Partner System Identifier=0x8000,08-17-f4-c3-df-00
  Operational key=0x40
  Max delay=5
  Aggregate or individual=0(aggregate)
  Member Port List=9,10,11,12
```

show lacp system-identifier

Displays the switch Link Aggregation Control Protocol (LACP) system identifier.

Syntax

show lacp system-identifier

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the switch LACP system identifier:

```
Switch> show lacp system-identifier

% System 32768,a8-97-dc-de-25-00
```

show license

Displays information about Feature on Demand (FoD) license files.

Syntax

show license {<*FoD license*>**|brief|host-id}**

where:

Parameter	Function
FoD license	The name of the FoD license file.
brief	Displays a short FoD license summary.
host-id	Displays the host ID for the FoD license files.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the host ID for the FoD license files:

```
Switch> show license host-id

System serial number: YO52MV4CRO26
```

show lldp interface

Displays Link Layer Discovery Protocol (LLDP) interface configuration.

Syntax

show lldp interface {all|ethernet *<chassis number/port number>***|mgmt** *<management interface>***}**

where:

Parameter	Function
`all`	Displays LLDP configuration for all interfaces.
`ethernet` *chassis number/port number*	Displays LLDP configuration for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`mgmt` *management interface*	Displays LLDP configuration for the specified management interface. The *management interface* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LLDP configuration for management interface 0:

```
Switch> show lldp interface mgmt 0

Interface Name: mgmt0
--------------
Interface Information
 Enable (tx/rx/trap): Y/Y/N   Port Mac address: a8:97:dc:de:25:00
```

show lldp internal event-history

Displays Link Layer Discovery Protocol (LLDP) event logs.

Syntax

show lldp internal event-history {buffer-size all|{errors| event|msgs|trace} interface ethernet *<chassis number/port number>***}**

where:

Parameter	Function
buffer-size all	Displays the LLDP buffer size for all types of events.
errors	Displays the LLDP error logs.
event	Displays the LLDP event logs.
msgs	Displays the LLDP message logs.
trace	Displays the LLDP trace logs.
interface ethernet *chassis number/port number*	Displays LLDP logs for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LLDP buffer size:

```
Switch> show lldp internal event-history buffer-size all

Name     Current    Max
errors   279        16384
msgs     16374      16384
trace    130943     131072
event    16367      16384
```

The following command displays LLDP error logs for ethernet interface 1/12:

```
Switch> show lldp internal event-history errors interface ethernet 1/12

Event: errors, length:66, at 234001 usecs after Fri Jan  8 04:58:40 2016
 [GLOBAL] @{lldp_mgmt_recv:711}
 receive failed (-1) on 0x3(mgmt0)

Event: errors, length:66, at 93092 usecs after Fri Jan  8 09:39:43 2016
 [GLOBAL] @{lldp_mgmt_recv:711}
 receive failed (-1) on 0x3(mgmt0)
```

show lldp internal info

Displays Link Layer Discovery Protocol (LLDP) internal information.

Syntax

show lldp internal info {global|interface {all|ethernet *<chassis number>***/***port number>***|mgmt** *<management interface>***}|neighbors}**

where:

Parameter	Function
`global`	Displays global LLDP internal information.
`interface all`	Displays LLDP internal information for all interfaces.
`interface ethernet` *chassis number***/***port number*	Displays LLDP internal information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface mgmt` *management interface*	Displays LLDP internal information for the specified management interface. The *management interface* is 0.
`neighbors`	Displays LLDP internal neighbor information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays global LLDP internal information:

```
Switch> show lldp internal info global

sockfd                          :10
lldp_rcv_thread                 :0x10347ff0
lldp_if_list                    :0x1033b4f0
lldp_mgmt_if_list               :0x1033b6d8
if_cnt                          :0
syscap                          :0x7
sys_cap_enabled                 :0x14
lldp_stats_rem_drops            :0
lldp_stats_rem_inserts          :1
lldp_stats_rem_deletes          :0
sys_name                        :LENOVO G8272
sys_descr                       :LENOVO RackSwitch G8272, LENOVO
Networking
 OS version 10.1.1.0
lldp_stats_rem_last_change_time :69
lldp_dest_addr                  :0180-c200-000e
lldp_ntfy_interval              :5
mgmt_addr                       :0.0.0.0
conf_flag                       :0
```

show lldp neighbors

Displays Link Layer Discovery Protocol (LLDP) neighbor information.

Syntax

show lldp neighbors [interface {ethernet *<chassis number/port number>***|mgmt** *<management interface>***}] [detail]**

where:

Parameter	Function
`interface ethernet` *chassis number/port number*	Displays LLDP information for neighbors on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface mgmt` *management interface*	Displays LLDP information for neighbors on the specified management interface. The *management interface* is 0.
`detail`	Displays detailed LLDP neighbor information.

Modes

● User EXEC mode
● Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LLDP neighbor information:

```
Switch> show lldp neighbors
```

show lldp timers

Displays Link Layer Discovery Protocol (LLDP) timer information.

Syntax

```
show lldp timers
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LLDP timers:

```
Switch> show lldp timers

LLDP Timers:

Holdtime in seconds: 120
Reinit-time in seconds: 2
Transmit interval in seconds: 30
Transmit delay in seconds: 2
Trap interval in seconds: 5
```

show lldp tlv-select

Displays the selected Link Layer Discovery Protocol (LLDP) type-length-value (TLV) structures.

Syntax

show lldp tlv-select [interface {ethernet *<chassis number/port number>***|mgmt** *<management interface>***}]**

where:

Parameter	Function
`interface ethernet` *chassis number/port number*	Displays the selected LLDP TLVs on the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface mgmt` *management interface*	Displays the selected LLDP TLVs on the specified management interface. The *management interface* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the selected LLDP TLVs on management interface 0:

```
Switch> show lldp tlv-select interface mgmt 0

Interface information: mgmt0
  dcbx
  management-address
  port-description
  port-vlan
  system-capabilities
  system-description
  system-name
```

show lldp traffic

Displays Link Layer Discovery Protocol (LLDP) traffic statistics, including the number of transmitted or discarded messages.

Syntax

show lldp traffic [interface {ethernet *<chassis number/port number>***|mgmt** *<management interface>***}]**

where:

Parameter	Function
interface ethernet *chassis number/port number*	Displays LLDP traffic statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface mgmt *management interface*	Displays LLDP traffic statistics for the specified management interface. The *management interface* is 0.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LLDP traffic statistics:

```
Switch> show lldp traffic

LLDP traffic statistics:

Total frames transmitted: 80816
Total entries aged: O
Total frames received: 80797
Total frames received in error: O
Total frames discarded: O
Total unrecognized TLVs: O
```

show logging console

Displays the console logging configuration, including the administrative status (enabled/disabled), the severity level and console flood control operational status. The flood control can be enabled, or disabled, by the user by typing CTRL-C consecutively three within a 3 seconds time window. When flood control is enabled, logging to the console is suspended.

Syntax

```
show logging console
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the console logging configuration:

```
Switch> show logging console

Logging console:             enabled (Severity: informational)
Console flood control:       disabled
```

show logging info

Displays logging configuration, including console, monitor, server, log file, time stamp and severity levels configured for each facility.

Syntax

```
show logging info
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays logging information:

```
Switch> show logging info
Logging console:               enabled (Severity: information)
Console flood control:         enabled
Console event_log control:   disabled
Logging monitor:               enabled (Severity: notifications)
Logging monitor session:      O session disabled, O session enabled
Monitor event_log control:   disabled
Logging timestamp:             seconds
Logging throttling:            disabled
Logging logfile:               enabled
       Name - messages: Severity - information Size - 10485760
Logging server:                disabled

Facility        Default Severity      Current Session Severity
--------        ----------------      ------------------------
aaa                     5                       5
acllog                  6                       6
bgp                     5                       5
chassisd             5                     5
clid                  5                       5
dhcp-snp            5                     5
ecp                     6                       6
hostmib               6                     6
hostp                 5                       5
hsl                     3                       3
imi                     6                       6
imish                 6                       6
khsl                    6                       6
l2mrib               5                     5
lacp                   5                       5
lldp                   5                       5
memmon             6                       6
...
```

show logging ip access-list

Displays logging configuration, including console, monitor, server, log file, time stamp and severity levels configured for the IP access list.

Syntax

show logging ip access-list {cache|status}

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays logging information:

```
Switch> show logging ip access-list cache
 Index)Src IP, Dst IP, Src-Port, Dst-Port, Src Intf, Protocol
  ACL-Name, ACE-Number, Action, Direction, ACL Type,Applied Intf, Hits
--------------------------------------------------------------------------
-
1) 100.0.0.9, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 90, Deny, in, IPv4, Ethernet1/66, 170
2) 100.0.0.7, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 70, Deny, in, IPv4, Ethernet1/66, 176
3) 100.0.0.5, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 50, Deny, in, IPv4, Ethernet1/66, 178
4) 100.0.0.3, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 30, Deny, in, IPv4, Ethernet1/66, 178
5) 100.0.0.8, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 80, Deny, in, IPv4, Ethernet1/66, 172
6) 100.0.0.6, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 60, Deny, in, IPv4, Ethernet1/66, 175
7) 100.0.0.4, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 40, Deny, in, IPv4, Ethernet1/66, 178
8) 100.0.0.2, 200.0.0.200, 1000, 69, Ethernet1/66, udp(17)
        ipacl, 20, Deny, in, IPv4, Ethernet1/66, 176
```

show logging last

Displays the most recent lines in the logging file.

Syntax

show logging last *<number of lines>* **[tail]**

where:

Parameter	Function
number of lines	The number of lines to be displayed. The *number of lines* is from 1 to 9999.
tail	The show will be updated as new lines are added to the logging file. Press **<CTRL + C>** to quit the show.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the most recent 10 lines in the logging file:

```
Switch> show logging last 10

79844 2017-05-18T18:07:16+00:00 VO_31(cnos:data) %BGP-5-STATE_CHANGE:
100.0.0.1- [FSM] State Change: Idle(1)

79845 2017-05-18T18:07:21+00:00 VO_31(cnos:data) %BGP-5-STATE_CHANGE:
100.0.0.1- [FSM] State Change: Established(6)

79846 2017-05-19T10:56:16+00:00 VO_31(cnos:data) %IMI-5-USER_LOGIN: User
admin logged in with /dev/pts/0 from 10.72.97.162 via telnet,
authenticated by LOCAL

79847 2017-05-19T11:13:13+00:00 VO_31(cnos:data) %IMI-5-USER_LOGOUT: User
admin logged out with /dev/pts/0 from 10.72.97.162. session telnet,
authentication LOCAL

79848 2017-05-19T11:28:36+00:00 VO_31(cnos:data) %IMI-5-USER_LOGIN: User
admin logged in with /dev/pts/0 from 10.72.97.162 via telnet,
authenticated by LOCAL
```

show logging level

Displays the logging level for each facility in the system. Each facility corresponds to an application, process, protocol, or module.

Syntax

show logging level [<*facility*>**]**

where:

Parameter	Function
facility	Displays the severity level configured for the specified facility. A facility is a keyword used to identify the application, process, protocol, or module that logs a message. The list of supported facilities is shown after this table.

You can show the severity level of the following *facilities*:

- `aaa` - Authentication, Authorization and Accounting (AAA)
- `bfd` - Bidirectional Forwarding Detection (BFD)
- `bgp` - Border Gateway Protocol (BGP)
- `chassisd` - Chassis Daemon
- `clid` - Command Line Interface (CLI) Daemon
- `dhcp-snp` - Dynamic Host Configuration Protocol (DHCP) Snooping
- `ecp` - Edge Control Protocol (ECP)
- `hostmib` - Host Management Information Base (MIB)
- `hostp` - Host Protocols
- `hsc` - Hardware Switch Controller (HSC)
- `hsl` - Hardware Services Layer (HSL)
- `imi` - Integrated Management Interface (IMI)
- `imish` - Integrated Management Interface Shell (IMISH)
- `khsl` - Kernel Hardware Services Layer (KHSL) module
- `l2mrib` - Layer 2 Multicast Routing Information Base (MRIB)
- `lacp` - Link Aggregation Control Protocol (LACP)
- `lldp` - Link Layer Discovery Protocol (LLDP)
- `memmon` - Memory Monitor
- `ndd` - Neighbor Discovery Daemon (NDD)
- `nlog` - Logging Control Daemon (NLOG)
- `npa` - Network Policy Agent (NPA)
- `nsm` - Network Service Module (NSM)

- `ntp` - Network Time Protocol (NTP)
- `nwv` - Network Virtualization (NWV)
- `onm` - Network Management
- `ospf` - Open Shortest Path First (OSPF)
- `ovsdb` - Open vSwitch Database Management Protocol (OVSDB)
- `pam` - Linux Pluggable Authentication Modules (PAM)
- `pki` - Public Key Infratructure (PKI)
- `platform-mgr` - Platform Manager
- `pubsub` - Publisher/Subscriber Inter Process Communication Module
- `pyrun` - Python Runtime Environment
- `pysched` - Python Scheduler
- `rest` - REpresentational State Transfer (REST)
- `rib` - Routing Information Base (RIB)
- `service-mgr` - Service Manager
- `slp` - Service Location Protocol (SLP)
- `smiacl2mrib` - Simple Management Interface (SMI) API Client (AC) Layer 2 Multicast Routing Information Base (MRIB)
- `smi-ac-lacp` - SMI AC Link Aggregation Control Protocol (LACP)
- `smi-ac-mstp` - SMI AC Multiple Spanning Tree Protocol (MSTP)
- `smi-ac-ndd` - SMI AC Neighbor Discovery Daemon (NDD)
- `smi-ac-nsm` - SMI AC Network Service Module (NSM)
- `smi-ac-onm` - SMI AC Open Network Management (ONM)
- `smi-ac-rib` - SMI AC Routing Information Base (RIB)
- `smi-ac-telemetry` - SMI AC Telemetry service
- `smi-ac-vrrp` - SMI AC Virtual Router Redundancy Protocol (VRRP)
- `snmp` - Simple Network Management Protocol (SNMP)
- `ssh` - Secure Shell (SSH)
- `stp` - Spanning Tree Protocol (STP)
- `syslog` - System Log Host Protocol
- `sysmgmt` - System Management Host Protocol
- `sysmgr` - System Manager
- `tacacs` - Terminal Access Controller Access-Control System Plus (TACACS+)
- `telemetry` - Telemetry service
- `telnet` - Telnet Control Host Protocol
- `um` - User Management
- `vlag` - Virtual Link Aggregation Group (VLAG)

- `vlan` - Virtual Local Area Network (VLAN)
- `vrrp` - Virtual Router Redundancy Protocol (VRRP)
- `ztp` - Zero Touch Provisioning

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays severity levels configured for each feature:

```
Switch> show logging level

Facility          Default Severity      Current Session Severity
--------          ----------------      ------------------------
aaa                      5                         5
bgp                      5                         5
ecp                      6                         6
hostmib                  6                         6
hostp                    5                         5
hsl                      3                         3
imi                      6                         6
imish                    6                         6
khsl                     6                         6
l2mrib                   5                         3
lacp                     5                         5
lldp                     5                         5
...
um                       5                         5
vlan                     5                         5
vrrp                     6                         6
vlag                     6                         6
ztp                      6                         6

0(emergencies)         1(alerts)       2(critical)
3(errors)              4(warnings)     5(notifications)
6(information)         7(debugging)
```

show logging library

Displays the severity level configured for system library facilities.

Syntax

```
show logging library [hsl-nos-ipcc|hsl-nos-ipcs|lli|log|
|mcast|sal-pdp|secureimg|sysinfo] [facility <facility>]
```

where:

Parameter	Function
`hsl-nos-ipcc`	Displays the severity level configured for the HSL Inter-Process-Communication Client library.
`hsl-nos-ipcs`	Displays the severity level configured for the HSL Inter-Process-Communication Server library.
`lli`	Displays the severity level configured for the low level drivers interface library.
`log`	Displays the severity level configured for the log logging library.
`mcast`	Displays the severity level configured for the multicast logging library.
`sal-pdp`	Displays the severity level configured for the SDK Abstraction Layer (SAL) logging library.
`secureimg`	Displays the severity level configured for the secure image logging library.
`sysinfo`	Displays the severity level configured for the system information library.
`facility` *facility*	Displays the severity level configured for the specified application process facility and selected system library facility. The list of supported facilities is shown after this table.

You can show the severity level of the following *facilities*:

- `bfd` - Bidirectional Forwarding Detection (BFD)
- `bgp` - Border Gateway Protocol (BGP)
- `chassisd` - Chassis Daemon
- `clid` - Command Line Interface (CLI) Daemon
- `dhcp-snp` - Dynamic Host Configuration Protocol (DHCP) Snooping
- `ecp` - Edge Control Protocol (ECP)
- `hostmib` - Host Management Information Base (MIB)
- `hostp` - Host Protocols

- `hsl` - Hardware Services Layer (HSL)
- `hsc` - Hardware Switch Controller (HSC)
- `imi` - Integrated Management Interface (IMI)
- `imish` - Integrated Management Interface Shell (IMISH)
- `l2mrib` - Layer 2 Multicast Routing Information Base (MRIB)
- `lacp` - Link Aggregation Control Protocol (LACP)
- `memmon` - Memory Monitor
- `ndd` - Neighbor Discovery Daemon (NDD)
- `nlog` - Logging Control Daemon (NLOG)
- `npa` - Network Policy Agent (NPA)
- `nsm` - Network Service Module (NSM)
- `nwv` - Network Virtualization (NWV)
- `onm` - Network Management
- `ospf` - Open Shortest Path First (OSPF)
- `ovsdb` - Open vSwitch Database Management Protocol (OVSDB)
- `pam` - Linux Pluggable Authentication Modules (PAM)
- `platform-mgr` - Platform Manager
- `pubsub` - Publisher/Subscriber Inter Process Communication Module
- `pyrun` - Python Runtime Environment
- `pysched` - Python Scheduler
- `rest` - REpresentational State Transfer (REST)
- `rib` - Routing Information Base (RIB)
- `service-mgr` - Service Manager
- `stp` - Spanning Tree Protocol (STP)
- `sysmgr` - System Manager
- `telemetry` - Telemetry service
- `vlag` - Virtual Link Aggregation Group (VLAG)
- `vrrp` - Virtual Router Redundancy Protocol (VRRP)
- `ztp` - Zero Touch Provisioning

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the severity level configured for libraries:

```
Switch> show logging library

Library        Client-Facility  Default Severity  Current Session Severity
------------   ---------------  ----------------  ------------------------
hsl-nos-ipcc   bgp                       3                         3
hsl-nos-ipcc   chassisd                  3                         3
hsl-nos-ipcc   clid                      3                         3
hsl-nos-ipcc   dhcp-snp                  3                         3
hsl-nos-ipcc   ecp                       3                         3
hsl-nos-ipcc   hostmib                   3                         3
hsl-nos-ipcc   hostp                     3                         3
hsl-nos-ipcc   hsl                       3                         3
hsl-nos-ipcc   imi                       3                         3
hsl-nos-ipcc   imish                     3                         3
hsl-nos-ipcc   l2mrib                    3                         3
hsl-nos-ipcc   lacp                      3                         3
hsl-nos-ipcc   memmon                    3                         3
hsl-nos-ipcc   stp                       3                         3
hsl-nos-ipcc   ndd                       3                         3
hsl-nos-ipcc   nlog                      3                         3
hsl-nos-ipcc   nsm                       3                         3
hsl-nos-ipcc   bfd                       3                         3
hsl-nos-ipcc   onm                       3                         3
hsl-nos-ipcc   ospf                      3                         3
hsl-nos-ipcc   platform-mgr              3                         3
hsl-nos-ipcc   pubsub                    3                         3
...
```

show logging logfile

Displays the messages stored in the log file.

Syntax

show logging logfile [last-index|start-seqn *<sequence number>*
[end-seqn *<sequence number>*]**|start-time** *<year> <month> <day>*
<hour>:<minute>:<seconds> **[end-time** *<year> <month> <day> <hour>:<minute>:*
<seconds>]**]**

where:

Parameter	Function
last-index	Displays the sequence number of the most recent message stored in the log file.
start-seqn	Displays messages from log file from a given start-sequence-number.
sequence number	The sequence number associated to each syslog message stored in the log file. The *sequence number* is from 0 to 2,147,483,647.
end-seqn	Displays messages from log file up to a given end-sequence-number.
start-time	Displays messages from log file from a given start-time.
end-time	Displays messages from log file up to a given end-time.
year	Time-stamp year using 4-digit representation e.g. 2016.
month	The month of the start or end time-stamp in the range Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.
day	Time-stamp day number in the range from 1 to 31.
hour	Time-stamp hour in the range from 00 to 23.
minute	Time-stamp minute in the range from 0 to 59.
seconds	Time-stamp second in the range from 0 to 59.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the messages stored in the log file:

```
Switch> show logging logfile

Logging logfile:                enabled
        Name - messages:Severity - informational Size - 10485760

2015-08-01T18:39:59+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
2015-08-01T18:40:04+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
2015-08-01T18:40:09+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
2015-08-01T18:40:14+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
2015-08-01T18:40:19+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
2015-08-01T18:40:24+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
2015-08-01T18:40:29+00:00 G8272 %PLATFORM_MGR-3-LLI_PROCESS_EVENT: Event
process
ed (event=5, unit=0, state=0->0)
...
```

The following command displays the sequence number of the most recent log message stored in the log file:

```
Switch> show logging logfile last-index

logfile last-index : 82678
```

The following command displays log messages whose sequence numbers are within the range 100 and 105:

```
Switch>show logging logfile start-seqn 100 end-seqn 105

Last Log cleared/wrapped time is : None
100 2016-01-29T22:02:23+00:00 MarsSQA %VRRP-5-STARTED: VRRP service
started
101 2016-01-29T22:02:27+00:00 MarsSQA %UM-5-ROOT_DISABLE: Root login
disabled
102 2016-01-29T22:02:28+00:00 MarsSQA %VLOG-6-STARTUP_CONFIG: Startup
configuration processed
103 2016-01-29T22:02:28+00:00 MarsSQA %LLILIB-5-DEVICE_ENABLE:
[PLATFORM_MGR] PasDAC 1.0m inserted at port Ethernet1/8 is Approved.
104 2016-01-29T22:02:32+00:00 MarsSQA %NSM-5-IFM_LINK_UP: Link up on
interface Ethernet1/8
```

The following command displays log messages whose time-stamps are within the range 2016 Jan 29 22:02:28 and 2016 Jan 31 10:25:30:

```
Switch>show logging logfile start-time 2016 Jan 29 22:02:28 end-time 2016
Jan 31 10:25:30

2016-01-29T22:02:28+00:00 MarsSQA %LLILIB-5-DEVICE_ENABLE: [PLATFORM_MGR]
PasDAC 1.0m inserted at port Ethernet1/7 is Approved.
2016-01-29T22:02:28+00:00 MarsSQA %VLOG-6-STARTUP_CONFIG: Startup
configuration processed
2016-01-29T22:02:32+00:00 MarsSQA %NSM-5-IFM_LINK_UP: Link up on
interface Ethernet1/7
2016-01-29T22:02:35+00:00 MarsSQA %NSM-5-IFM_LINK_UP: Link up on
interface mgmt0
2016-01-29T22:03:42+00:00 MarsSQA %IMISH-5-USER_LOGIN: User admin logged
in
```

show logging mnemonics

Displays a list of all mnemonic strings related to a given facility or all facilities. This command also displays the syslog IDs associated with the specified facility.

Syntax

show logging mnemonics [<*facility*>]

where:

Parameter	Function
facility	Displays the list of all mnemonic strings related to the specified facility. A facility is a keyword used to identify the application, process, protocol, system library, or module that logs a message. The list of supported facilities is shown after this table.

You can show the severity level of the following *facilities*:

- `bfd` - Bidirectional Forwarding Detection (BFD)
- `bgp` - Border Gateway Protocol (BGP)
- `chassisd` - Chassis Daemon
- `clid` - Command Line Interface (CLI) Daemon
- `dhcp-snp` - Dynamic Host Configuration Protocol (DHCP) Snooping
- `ecp` - Edge Control Protocol (ECP)
- `hostmib` - Host Management Information Base (MIB)
- `hostp` - Host Protocols
- `hsc` - Hardware Switch Controller (HSC)
- `hsl` - Hardware Services Layer (HSL)
- `hsl-nos-ipcc` - HSL Inter-Process-Communication Client library.
- `hsl-nos-ipcs` - HSL Inter-Process-Communication Server library.
- `imi` - Integrated Management Interface (IMI)
- `imish` - Integrated Management Interface Shell (IMISH)
- `khsl` - Kernel Hardware Services Layer (KHSL) module
- `l2mrib` - Layer 2 Multicast Routing Information Base (MRIB)
- `lacp` - Link Aggregation Control Protocol (LACP)
- `lldp` - Link Layer Discovery Protocol (LLDP)
- `log` - Logging Management Interface Library
- `mcast` - Multicast Services Library
- `memmon` - Memory Monitor
- `ndd` - Neighbor Discovery Daemon (NDD)

- `nlog` - Logging Control Daemon (NLOG)
- `npa` - Network Policy Agent (NPA)
- `nsm` - Network Service Module (NSM)
- `ntp` - Network Time Protocol (NTP)
- `nwv` - Network Virtualization (NWV)
- `onm` - Network Management
- `ospf` - Open Shortest Path First (OSPF)
- `ovsdb` - Open vSwitch Database Management Protocol (OVSDB)
- `pam` - Linux Pluggable Authentication Modules (PAM)
- `platform-mgr` - Platform Manager
- `pubsub` - Publisher/Subscriber Inter Process Communication Module
- `pyrun` - Python Runtime Environment
- `pysched` - Python Scheduler
- `rest` - REpresentational State Transfer (REST)
- `rib` - Routing Information Base (RIB)
- `sal-pdp` - SDK Abstraction Layer (SAL)
- `secureimg` - Secure Image Validation Library
- `service-mgr` - Service Manager
- `slp` - Service Location Protocol
- `stp` - Spanning Tree Protocol (STP)
- `sysinfo` - System Information
- `sysmgmt` - System Management Host Protocol
- `sysmgr` - System Manager
- `telemetry` - Telemetry service
- `um` - User Management
- `vlag` - Virtual Link Aggregation Group (VLAG)
- `vlan` - Virtual Local Area Network (VLAN)
- `vrrp` - Virtual Router Redundancy Protocol (VRRP)
- `ztp` - Zero Touch Provisioning

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays mnemonic strings related to the BGP facility:

```
Switch> show logging mnemonics bgp

[BGP Application Messages]
-------------------------------------------------------------------------------
BGP-3-ADV_INVALID_ROUTE: [chars]- Prefix: [chars] has null/bad info, ignoring route
BGP-3-BAD_HOLD_TIME: [chars]- Open: Bad Hold-time ([dec])
BGP-3-BAD_REMOTE_AS: neighbor [chars] - bad remote-as, expecting [dec] received [dec]
BGP-3-BAD_VERSION: [chars]- Open: Bad protocol version [dec]
BGP-3-CONNECT_ERROR: Connect error
BGP-3-OPT_AUTH_NOT_SUP: [chars]- Open Opt: Auth not supported
BGP-3-OPT_STRICT_CAP_MISMATCH: [chars]- Open Opt: Strict, Cap mis-match
BGP-3-SMGR_CLIENT_INIT_ERROR: Service manager client initialization failed
BGP-3-SOCKET_ERROR: Socket error
BGP-3-STRICT_CAP_MISMATCH: [chars]- Open Opt: Strict, Cap mis-match
BGP-3-UNACCEPTABLE_HOLD_TIME: [chars]- Open: Unacceptable Hold-time ([dec])
BGP-3-VRF_ADD_NO_REPLY_SAVE_VRF: VRF Add unable to replay save cli for vrf
BGP-3-VRF_SAVE_CMD: Cannot save vrf command to imi
BGP-3-WRITE_ERROR: Write error
BGP-6-ADJ_CHANGE: Neighbor [chars] [chars] [chars]
BGP-6-BFD_SESSION_DWN_RCVD: Session down received FLAG = [dec]
BGP-6-BFD_SESSION_UP_RCVD: Session up set FLAG = [dec]
BGP-6-STARTING_BGPD: BGPd [chars] starting: vty@[dec], bgp@[dec]
BGP-6-SYSLOG_INIT: Syslog service initialized
BGP-5-MAX_PEER_INGRP_EXCEED: Peer-group [chars] has maximum peers [dec],ignoring peer [chars]
BGP-5-STATE_CHANGE: [chars]- [FSM] State Change: [chars]([dec])
BGP-5-UNCONFIGURED_PEER: No matching peer or peer-group configured,ignoring peer [chars]
BGP-4-MAXPFXEXCEED: No. of prefix received from [chars] (afi-safi [dec]-[dec]): [dec] exceed
maximum prefix limit [dec]
BGP-4-MAXPFX: No. of prefix received from [chars] (afi-safi [dec]-[dec]): reaches [dec], max
[dec]
BGP-4-SAME_ROUTER_ID: neighbor [chars] uses same routerid [chars] as us
BGP-4-UPD_AGGR_NO_ASVAL: [chars]- Attr Aggregator: AS value error([dec]), Ignoring error...
BGP-4-UPD_SAME_ORIGID: [chars]- Attr OrigID: OrigID([chars]) same as Self, Ignoring UPDATE...
```

show logging monitor

Displays the monitor (Telnet and Secure Shell (SSH) sessions) logging configuration including the administrative status (enabled/disabled) and the severity level.

Syntax

show logging monitor

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the monitor logging configuration:

```
Switch> show logging monitor

Logging monitor:              enabled (Severity: notifications)
```

show logging rate-limit

Displays the rate limit configuration (maximum number of messages that can be logged per time interval in seconds) for three supported contexts:

- for the entire system;
- for each severity level;
- for each facility;

Syntax

show logging rate-limit

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the limit of logged messages:

```
Switch> show logging rate-limit

Dimension              Default Burst/Interval   Current Burst/Interval
---------------------  ----------------------   ----------------------
system                    512/5                    512/5
emerg           S(0)   1024/10                  1024/10
alert           S(1)   1024/10                  1024/10
crit            S(2)   1024/10                  1024/10
err             S(3)   1024/10                  1024/10
warning         S(4)   1024/10                  1024/10
notice          S(5)   1024/10                  1024/10
info            S(6)   1024/10                  1024/10
debug           S(7)   1024/10                  1024/10
aaa             F( 9)   512/10                   512/10
bgp             F(11)   512/10                   512/10
chassisd        F(12)   512/10                   512/10
clid            F(13)   512/10                   512/10
dhcp_snp        F(14)   512/10                   512/10
ecp             F(17)   512/10                   512/10
hostmib         F(18)   512/10                   512/10
hostp           F(19)   512/10                   512/10
hsl             F(20)   512/10                   512/10
imi             F(23)   512/10                   512/10
imish           F(24)   512/10                   512/10
khsl            F(26)   512/10                   512/10
...
```

show logging server

Displays the remote syslog server configuration including the server or address (IPv4 or IPv6), the severity level and the outgoing facility.

Syntax

show logging server

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the remove syslog server configuration:

```
Switch> show logging server

IPv4 Servers:
        *2.2.2.1
severity: (debugging)
facility: local7
* - Values assigned by DHCP Client.
```

show logging throttle

Displays logging throttle information.

Syntax

show logging throttle

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays logging throttle information:

```
Switch> show logging throttle

Logging throttling:            disabled
```

show logging timestamp

Displays the logging time-stamp unit configured.

Syntax

```
show logging timestamp
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the logging time-stamp units configured:

```
Switch> show logging timestamp

Logging timestamp:              seconds
```

show mac access-lists

Displays Media Access Control (MAC) Access Control Lists (ACLs).

Syntax

show mac access-lists [<*access list name*>**] [expanded|summary]**

where:

Parameter	Function
access list name	The name of the MAC access list.
expanded	Displays the contents of each ACE (Access Control Entry).
summary	Displays a summary of each ACL, including the total number of configured ACEs and the interfaces on which the ACL is configured or active.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all MAC ACLs:

```
Switch> show mac access-lists
```

show mac address-table

Displays Media Access Control (MAC) addresses.

Syntax

```
show mac address-table [dynamic|static] [address <MAC address>]
[interface {ethernet <chassis number/port number>|
port-channel <LAG number>}] [vlan <VLAN number>]
```

where:

Parameter	Function
dynamic	Displays dynamic MAC addresses.
static	Displays static MAC addresses.
address *MAC address*	Displays information for the specified MAC address. The *MAC address* can be written in any of the following formats: ● X.X.X ● XX-XX-XX-XX-XX-XX ● XX:XX:XX:XX:XX:XX ● XXXX.XXXX.XXXX
interface ethernet *chassis number/port number*	Displays MAC addresses for the specified ethernet interface. The *chassis number* is 1.
interface port-channel *LAG number*	Displays MAC addresses for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays MAC addresses for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4093.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the MAC address table:

```
Switch> show mac address-table

VLAN     MAC Address     Type      Ports
  -----+---------------+---------+----------------------+
  1      0000.0001.0203  dynamic   po1000
  1      0000.0001.0204  dynamic   po1000
  1      0000.0001.0205  dynamic   po1000
  1      0000.0001.0206  dynamic   po1000
  1      0000.0001.0207  dynamic   po1000
  1      a897.dcf7.d501  static    po100
  1      0100.7fa3.b200  static    po100
```

show mac address-table aging-time

Displays the global aging time for dynamic Media Access Control (MAC) addresses. Aging time is the number of seconds until a dynamic MAC address is removed from the Forwarding Database (FDB). The aging time starts when the MAC address is learned.

Syntax

show mac address-table aging-time

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the aging time for dynamic MAC addresses:

```
Switch> show mac aging-time

Mac address Aging Time: 18OO
```

show mac address-table count

Displays the number of Forwarding Database (FDB) entries.

Syntax

```
show mac address-table count [dynamic|static] [address <MAC
address>] [interface {ethernet <chassis number/port number>|
port-channel <LAG number>}] [vlan <VLAN number>]
```

where:

Parameter	Function
dynamic	Displays the number of FDB dynamic entries.
static	Displays the number of FDB static entries.
address *MAC address*	Displays the number of FDB entries for the specified address. The *MAC address* can be written in any of the following formats: ○ X.X.X ○ XX-XX-XX-XX-XX-XX ○ XX:XX:XX:XX:XX:XX ○ XXXX.XXXX.XXXX
interface ethernet *chassis number/port number*	Displays the number of FDB entries for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays the number of FDB entries for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays the number of FDB entries for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the number of FDB entries:

```
Switch> show mac address-table count

MAC Entries for all vlans:
Dynamic Address Count: 5
Static Address Count: 1
Multicast MAC Address Count: 1
Total MAC Addresses in Use: 7
```

show mac address-table learning

Displays the status of Media Access Control (MAC) address learning for each ethernet interface.

Syntax

show mac address-table learning [interface ethernet *<chassis number/port number>*]

where:

Parameter	Function
interface ethernet *chassis number/port number*	Displays the status of MAC address learning for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the status of MAC address learning:

```
Switch> show mac address-table learning

MAC Learning is globally enabled
---------------------------------
Ethernet/Aggregation      Learning
Interface                 Status
---------------------------------
Ethernet1/1          Enabled
Ethernet1/2          Enabled
Ethernet1/3          Enabled
Ethernet1/4          Enabled
Ethernet1/5          Enabled
Ethernet1/6          Enabled
Ethernet1/7          Enabled
Ethernet1/8          Enabled
Ethernet1/9          Enabled
Ethernet1/10         Enabled
Ethernet1/11         Enabled
Ethernet1/12         Enabled
...
```

show mac address-table multicast

Displays multicast Media Access Control (MAC) addresses.

Syntax

show mac address-table multicast [count] [vlan *<VLAN number>***]
[user]**

where:

Parameter	Function
count	Displays the number of multicast MAC addresses.
vlan *VLAN number*	Displays the number of multicast MAC addresses for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4093.
user	Displays only the user configured multicast MAC addresses.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays multicast MAC addresses:

```
Switch> show mac address-table multicast

VLAN     MAC Address     Type      Ports
  -----+----------------+---------+----------------------+
  1      0100.7fa3.b200   static    po100
```

show monitor

Displays Ethernet Switch Port Analyzer (SPAN) information.

Syntax

show monitor [session {<*session number*>**|all|range** <*session range*>**}**
[brief]]

where:

Parameter	Function
session	Displays information for the specified SPAN session.
session number	The number of the SPAN session. The *session number* is from 1 to 18.
all	Displays information for all SPAN sessions.
range *session range*	Displays information for a range of SPAN sessions. The *session range* is from 1 to 18.
brief	Displays a short SPAN session summary.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays ethernet SPAN information:

```
Switch> show monitor
Session State        Reason                             Description
------- -----  ----------------------------- -------------------------
1       down   No route exists for cfg dst ip
```

```
Switch> show monitor
Session State        Reason                             Description
------- -----  ----------------------------- -------------------------
1       down   Waiting for ARP response
```

```
Switch> show monitor
Session State        Reason                             Description
------- -----  ----------------------------- -------------------------
1       up     The session is up
```

show nsm client

Displays Network Service Module (NSM) client information.

Syntax

show nsm client

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NSM client information:

```
Switch# show nsm client

NSM client ID: 4
 OSPF, socket 22
  Service: Interface Service, Router ID Service, VRF Service
  Messsage received 5, sent 191
  Connection time: Fri Jan  8 04:58:32 2016
  Last message read: Qos Copp parameter change
  Last message write: Address Add
NSM client ID: 7
 HOSTP, socket 30
  Service: Interface Service, Route Service, Router ID Service, VRF
          Service, VLAN service
  Messsage received 3, sent 360
  Connection time: Fri Jan  8 04:58:37 2016
  Last message read: Qos Copp parameter change
  Last message write: Address Add
NSM client ID: 14
 LACP, socket 26
  Service: Interface Service
  Messsage received 1, sent 158
  Connection time: Fri Jan  8 04:58:33 2016
  Last message read: Service Request
  Last message write: VR Sync MSG after config restore
...
```

show npa internal event-history

Displays Network Policy Agent (NPA) event history information.

Syntax

```
show npa internal event-history {errors|msgs}
```

where:

Parameter	Function
errors	Displays NPA errors information.
msgs	Displays NPA messages information.

Modes

Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays information on all NPA errors:

```
Switch# show npa internal event-history errors

Switch subscribe vm uuid: 1493ea75-f5e4-47f5-9f99-9d6a4005bc04

Switch subscribe vnet uuid: 6d61cffe-15f5-4d58-80d1-50adc37292b3

Event: ERRORS, length:51, at 994416 usecs after Mon Mar 20 16:33:47 2017
npa_nx_update_vnic_ifmap(2415):
invalid VDM node

Event: ERRORS, length:51, at 994683 usecs after Mon Mar 20 16:33:47 2017
npa_nx_update_vnic_ifmap(2415):
invalid VDM node

Event: ERRORS, length:51, at 994834 usecs after Mon Mar 20 16:33:47 2017
npa_nx_update_vnic_ifmap(2415):
invalid VDM node

Event: ERRORS, length:51, at 994992 usecs after Mon Mar 20 16:33:47 2017
npa_nx_update_vnic_ifmap(2415):
invalid VDM node

Event: ERRORS, length:51, at 12254 usecs after Mon Mar 20 16:33:48 2017
npa_nx_update_vnic_ifmap(2415):
invalid VDM node
...
```

The following command displays information on all NPA messages:

```
Switch# show npa internal event-history msgs

Switch subscribe vm uuid: 1493ea75-f5e4-47f5-9f99-9d6a4005bc04

Switch subscribe vnet uuid: 6d61cffe-15f5-4d58-80d1-50adc37292b3

Event: MESSAGES, length:93, at 977495 usecs after Mon Mar 20 16:33:47
2017
_npa_if_set_auto_policy(684):
Received auto-policy for iface po1, state = 1 ifindex 100001

Event: MESSAGES, length:93, at 979900 usecs after Mon Mar 20 16:33:47
2017
_npa_if_set_auto_policy(684):
Received auto-policy for iface po2, state = 1 ifindex 100002

Event: MESSAGES, length:93, at 980019 usecs after Mon Mar 20 16:33:47
2017
_npa_if_set_auto_policy(684):
Received auto-policy for iface po3, state = 1 ifindex 100003

Event: MESSAGES, length:93, at 980129 usecs after Mon Mar 20 16:33:47
2017
_npa_if_set_auto_policy(684):
Received auto-policy for iface po4, state = 1 ifindex 100004
...
```

show npa internal host-with-down-link

Displays Network Policy Agent (NPA) host-with-down-link history information.

Syntax

show npa internal host-with-down-link

Modes

Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays information on host-with-down-link errors:

```
Switch# show npa internal host-with-down-link

HOST(s) with down link:
  host-45
```

show npa internal policy

Displays Network Policy Agent (NPA) policy history information.

Syntax

```
show npa internal policy
```

Modes

Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays information on NPA policy history:

```
Switch# show npa internal policy
VDM Nutanix:

VDM VMware:
QUEUE:
 VM NAME: Win-1
 Policy name: cmap4
 Attached interface: 100001
```

show npa internal vlan

Displays Network Policy Agent (NPA) VLAN information.

Syntax

`show npa internal vlan {interface {ethernet` *<chassis number/port number>***`|port-channel`** *<LAG number or range>***`} |reference}`**

where:

Parameter	Function
`interface ethernet` *chassis number/port number*	Displays NPA VLAN information for the specified ethernet interface. The *chassis number* is 1.
`interface port-channel` *LAG number or range*	Displays NPA VLAN information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
`reference`	Displays NPA VLAN reference information.

Modes

Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays information about NPA VLAN interface:

```
Switch# show npa internal vlan interface port-channel 1

Interface po1 NPA internal:
CFG VLAN:
  1-4093
REQ VLAN:
  10,50
added in VDM
auto-policy enabled
```

The following command displays NPA VLAN reference information:

```
Switch# show npa internal vlan reference

VLAN reference information:
  2: 100003
  10: 100001
  11: 100004
  14: 100004
  30: 100002 100004
  40: 100002 100003
  45: 100003
  50: 100001
  89: 100003
  210: 100004
```

show npa internal vm-with-down-link

Displays Network Policy Agent (NPA) vm-with-down-link information.

Syntax

`show npa internal vm-with-down-link`

Modes

Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays NPA vm-with-down-link information:

```
Switch# show npa internal vm-with-down-link

VM(s) with down link:
  e90e2907-78a8-4129-9821-9f09b796d653
```

show npa internal vnic

Displays Network Policy Agent (NPA) VNIC information.

Syntax

show npa internal vnic

Modes

Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.

Example

The following command displays NPA VNIC information:

```
Switch# show npa internal vnic
vNICs info:
  vNIC uuid: 9ace26e5-39a7-469a-96f5-42f668a70f7e
    vm uuid: 526f3c82-7872-4bb2-a9a8-7b51ad513526
        vid: 210
      ifmap: 100004

  vNIC uuid: 1d009a7b-d27f-4463-ac03-ad882c220b91
    vm uuid: 526f3c82-7872-4bb2-a9a8-7b51ad513526
        vid: 30
      ifmap: 100004

  vNIC uuid: e1709dc3-c2eb-4f99-9247-5dbb164b1728
    vm uuid: 526f3c82-7872-4bb2-a9a8-7b51ad513526
        vid: 11
      ifmap: 100004

  vNIC uuid: 1491abde-58f8-422a-b914-6da9c3235fa6
    vm uuid: 67669b5d-db2d-458f-ae8d-8334c9e8d0d8
        vid: 89
      ifmap: 100003

  vNIC uuid: 63665b53-4b2b-4038-9f83-26202846875a
    vm uuid: 67669b5d-db2d-458f-ae8d-8334c9e8d0d8
        vid: 45
      ifmap: 100003

  vNIC uuid: c4e1ea20-130f-48af-a091-35f068e8349e
    vm uuid: 67669b5d-db2d-458f-ae8d-8334c9e8d0d8
        vid: 40
      ifmap: 100003
```

show ntp authentication-keys

Displays Network Time Protocol (NTP) authentication keys.

Syntax

show ntp authentication-keys

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NTP authentication keys:

```
Switch> show ntp authentication-keys

----------------------------------
Auth key        MD5 String
----------------------------------
1               IBMkalsdifjaldskf
```

show ntp authentication-status

Displays the status of Network Time Protocol (NTP) authentication.

Syntax

```
show ntp authentication-status
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NTP authentication status:

```
Switch> show ntp authentication-status

Authentication enabled.
```

show ntp peer-status

Displays the status of Network Time Protocol (NTP) association.

Syntax

show ntp peer-status

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NTP association status:

```
Switch> show ntp peer-status

Total peers : 1
* - selected for sync, + - peer mode(active),
- - peer mode(passive), = - polled in client mode
remote                 local              st   poll   reach   delay
----------------------------------------------------------------------
=9.110.36.180          9.111.86.200       16   64     0       0.00000
```

show ntp peers

Displays configured Network Time Protocol (NTP) servers and peers.

Syntax

```
show ntp peers
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NTP servers and peers:

```
Switch> show ntp peers

-------------------------------------------------
Peer IP Address                 Serv/Peer
-------------------------------------------------
9.110.36.180                    Server (configured)
```

show ntp statistics

Displays Network Time Protocol (NTP) statistics.

Syntax

show ntp statistics {io|local|memory|peer ipaddr *<peer address>***}**

where:

Parameter	Function
`io`	Displays input-output module statistics.
`local`	Displays local system statistics.
`memory`	Displays memory allocation statistics.
`peer ipaddr` *peer address*	Displays statistics associated with the specified peer. The *peer address* can be either an IPv4 or an IPv6 address.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NTP local system statistics:

```
Switch> show ntp statistics local

system uptime:         85589
time since reset:      85589
old version packets:   0
new version packets:   0
unknown version number: 0
bad packet format:     0
packets processed:     0
bad authentication:    0
```

show ntp trusted-keys

Displays Network Time Protocol (NTP) trusted keys.

Syntax

```
show ntp trusted-keys
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays NTP trusted keys:

```
Switch> show ntp trusted-keys

Trusted Keys:
1
```

show nwv vxlan datapath

Displays the VXLAN hardware datapath information.

Syntax

show nwv vxlan datapath [<*network ID*>**]**

where:

Parameter	Function
network ID	VXLAN network identifier; an integer from 1-16777214.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays the VXLAN hardware datapath information for VXLAN 2:

```
Switch(config)# show nwv vxlan datapath 2
```

show nwv vxlan information

Displays Network Virtualization (NWV) VxLAN-related information.

Syntax

```
show nwv vxlan information
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV VxLAN-related information:

```
Switch(config)# show nwv vxlan information
```

show nwv vxlan mac-address

Displays Network Virtualization (NWV) MAC address information.

Syntax

`show nwv vxlan mac-address [local|remote]`

where:

Parameter	Function
`local`	(Optional) show local MAC addresses
`remote`	(Optional) show remote MAC addresses

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV MAC address information:

```
Switch(config)# show nwv vxlan mac-address
```

show nwv vxlan tunnel

Displays Network Virtualization (NWV) VxLAN tunnel related information.

Syntax

```
show nwv vxlan tunnel
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV VxLAN tunnel related information:

```
Switch(config)# show nwv vxlan tunnel
```

show nwv vxlan virtual-network

Displays Network Virtualization (NWV) virtual network information.

Syntax

`show nwv vxlan virtual-network [[<network ID>] counters]`

where:

Parameter	Function
`counters`	show virtual network counters.
network ID	VXLAN network identifier; an integer from 1-16777214.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV virtual network information for VXLAN 5006:

```
Switch(config)# show nwv vxlan virtual-network 5006 counters
VNID       Pkts In          Bytes In            Pkts Out
Bytes Out
-----      -------          --------  --------          ---------
---------
5006       38804211         2638686348         77538542
4415713734
```

show nwv vxlan virtual-port counters

Displays Network Virtualization (NWV) virtual port counters information.

Syntax

`show nwv vxlan virtual-port counters [interface {ethernet` *<chassis number>***`/`***port number>***`|port-channel`** *<LAG number>***`}]`**

where:

Parameter	Function
counters	(Optional) show virtual port statistics
interface ethernet *chassis number*/*port number*	Displays virtual port counters information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays virtual port counters information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332

- RackSwitch G8272

- RackSwitch G8296

- ThinkSystem NE10032 RackSwitch

- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV virtual port counters information:

```
Switch(config)# show nwv vxlan virtual-port counters
Port                    VNID      Remote TEP      Pkts In        Bytes
In           Pkts Out    Bytes Out
---------------        --------   --------------  -------------
-------------------    -------------  -------------------
Ethernet1/1 (A)   5001     LOCAL                      66074
14271984     49498879      3168147317
Ethernet1/2 (A)   5002     LOCAL               38805395     2638766860
38805395                     0
Ethernet1/33 (A) 5002     LOCAL                      65571
4196544     38805362      2483543168
Ethernet1/2 (A)   5003     LOCAL               38805395     2638766860
38805395                     0
Ethernet1/2 (A)   5004     LOCAL               38805395     2638766860
38805395                     0
Ethernet1/2 (A)   5005     LOCAL               38805395     2638766860
38986066          22997809
Ethernet1/2 (A)   5006     LOCAL               38805395     2638766860
38805395                     0
Ethernet1/2 (A)   5007     LOCAL               38805395     2638766860
38805395                     0
Ethernet1/2 (A)   5008     LOCAL               38805395     2638766860
38805395                     0
```

show nwv vxlan virtual-port interface ethernet

Displays Network Virtualization (NWV) virtual port ethernet information.

Syntax

`show nwv vxlan virtual-port interface ethernet` *<chassis number>***/***<port number>*

where:

Parameter	Function
chassis number	The ethernet chassis number
port number	The ethernet port number

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV virtual port information for ethernet chassis and port 1/1:

```
Switch(config)# show nwv vxlan virtual-port interface ethernet 1/1
```

show nwv vxlan virtual-port interface port-channel

Displays Network Virtualization (NWV) virtual port information for the specified port aggregation.

Syntax

show nwv vxlan virtual-port interface port-channel *<aggregation>*

where:

Parameter	Function
aggregation	The port aggregation number; an integer from 1-4096.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.5	The command was introduced.
10.6	The command was introduced for NE2572 and NE10032.

Restrictions

This command only applies to the following switches:

- RackSwitch G8332
- RackSwitch G8272
- RackSwitch G8296
- ThinkSystem NE10032 RackSwitch
- ThinkSystem NE2572 RackSwitch

Example

The following command displays NWV virtual port information for port aggregation 2:

```
Switch(config)# show nwv vxlan virtual-port interface port-channel 2
```

show ovsdb certificate

Displays the ovsdb PKI profiles bound to VRFs.

Syntax

show ovsdb certificate

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays the ovsdb PKI profiles bound to VRFs summary information:

```
Switch(config)# show ovsdb certificate
ovsdb pki ovsdb_mgmt vrf management
ovsdb pki ovsdb_default vrf default
```

show pending

Displays the Multiple Spanning Tree (MST) configuration waiting to be applied.

Syntax

show pending

Modes

MST Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the pending MST configuration:

```
Switch(config-mst)# show pending
```

show pki

Displays Public Key Infratructure (PKI) summary information.

Syntax

show pki

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays PKI summary information:

```
Switch> show pki

PKI Profile Name: rest_default
        CSR: non-existed
        Host certificate: existed
        CA: O
        In used: Yes

PKI Profile Name: rest_mgmt
        CSR: non-existed
        Host certificate: existed
        CA: O
        In used: No

PKI Profile Name: test
        CSR: existed
        Host certificate: existed
        CA: 3
        In used: Yes
```

show pki ca

Displays Certificate Authority (CA) information.

Syntax

show pki *<PKI profile name>* **ca [base64|brief]**

where:

Parameter	Function
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.
base64	Displays CA information in base 64 format.
brief	Displays a brief summary of the CA information.

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays CA information:

```
Switch> show pki privKey1 ca
```

show pki csr

Displays Certificate Signing Request (CSR) information.

Syntax

show pki *<PKI profile name>* **csr [base64]**

where:

Parameter	Function
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.
base64	Displays CSR information in base 64 format.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays CSR information:

```
Switch> show pki privKey1 csr
```

show pki host-certificate

Displays host certificate information.

Syntax

show pki *<PKI profile name>* **host-certificate [base64]**

where:

Parameter	Function
PKI profile name	The name of the PKI profile. The *PKI profile name* can be up to 16 characters in length.
base64	Displays host certificate information in base 64 format.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays host certificate information:

```
Switch> show pki privKey1 host-certificate

Data:
    Version: 3 (0x2)
    Serial Number: 2 (0x2)
Signature Algorithm: sha256WithRSAEncryption
    Issuer: CN=MyTestCA
    Validity
        Not Before: Dec 5 11:39:34 2016 GMT
        Not After : Dec 5 11:39:34 2017 GMT
    Subject: CN=ubuntu, O=client
    Subject Public Key Info:
        Public Key Algorithm: rsaEncryption
            Public-Key: (2048 bit)
            Modulus:
                00:94:29:cc:b4:ec:08:14:f3:ac:91:e3:55:ca:59:
                88:81:3f:49:83:bf:18:ba:8c:65:78:e8:72:8a:eb:
                da:3a:c3:2d:38:84:03:c6:23:34:7e:8f:81:cc:b1:
                8b:a2:04:f3:ba:5a:7f:1f:f1:4a:1e:82:7c:8b:76:
                48:e5:35:73:6b:89:65:27:50:18:02:55:e9:3d:b8:
                54:00:4e:2f:39:66:2a:53:c0:36:d9:5b:40:91:85:
                ea:1d:5b:9a:e9:8f:a0:71:b0:77:df:51:28:27:5b:
                23:45:63:23:b3:d9:0c:85:18:f2:fd:6d:14:39:4e:
                26:9d:95:95:42:d4:8f:4c:f2:c6:ab:7b:fc:50:70:
                bc:b2:f6:36:ad:be:c2:e8:b5:7d:8d:68:2f:69:09:
                e3:ea:b9:58:b6:ca:a3:5e:8b:d3:37:f8:68:c9:02:
                ef:64:f7:fb:21:c6:3a:5d:da:2f:bc:6d:46:0b:d7:
                ee:94:29:31:ca:59:c1:6d:ec:0d:94:39:ba:51:45:
                4e:78:26:28:01:48:74:41:14:ff:c3:57:7c:2c:f0:
                61:ec:94:d9:bd:d0:6e:db:bd:83:05:eb:76:28:e1:
                40:0c:c4:6c:6c:79:2e:b8:ff:6e:15:20:5b:37:6f:
                8a:99:b5:9c:35:3f:a8:0f:8e:eb:f3:45:82:b9:93:
                36:89
            Exponent: 65537 (0x10001)
        X509v3 extensions:
            X509v3 Basic Constraints:
                CA:FALSE
            X509v3 Key Usage:
                Digital Signature
            X509v3 Extended Key Usage:
                TLS Web Client Authentication
        Signature Algorithm: sha256WithRSAEncryption
            0a:ff:26:4f:e1:d2:76:95:2a:86:18:14:9d:46:c8:0b:a8:ed:
            a7:01:5a:58:04:b7:6d:87:c4:aa:17:40:e2:a4:59:3a:ef:a6:
            17:db:80:37:73:d9:7b:51:a9:82:17:fa:f6:7d:45:e0:e9:f0:
            b7:5f:1f:04:b4:0e:74:52:16:31:a3:b4:59:72:4b:50:48:81:
            14:f0:6f:26:11:49:8f:31:c2:76:3a:49:df:fb:24:2e:19:12:
            90:51:1f:21:7b:32:5c:76:bd:29:03:77:29:57:bc:f2:0e:70:
            3a:5d:53:41:2e:27:23:f8:35:06:2e:7e:2a:93:cb:62:98:37:
            5c:7a:bf:43:e1:d5:c8:45:0e:b6:8e:1d:75:03:bf:0d:a9:19:
            2f:0b:4e:c6:e8:9c:97:67:8d:8c:2d:82:e6:9d:79:4d:10:90:
            98:d3:18:86:09:37:ef:02:5a:8e:4c:9e:ac:c8:d5:4c:7d:81:
            6f:34:3a:46:6b:a8:11:0d:b1:c2:5f:3c:36:c3:0b:68:a6:2c:
            a4:76:df:a8:f8:f2:90:e0:e0:3c:4e:07:d7:16:56:e1:0e:db:
            9e:5f:9b:1f:bd:4b:01:58:fb:5a:f3:b6:d6:17:d2:ac:70:6a:
            65:d2:30:f2:c9:76:90:d5:ce:8c:f8:5f:f3:99:96:03:0c:10:
            e8:34:4a:50
```

show policy-map

Displays policy map information.

Syntax

show policy-map [<*policy map name*>**]**

where:

Parameter	Function
policy map name	Displays information only for the specified policy map.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays policy map information:

```
Switch> show policy-map

Type control-plane policy-maps
==============================

policy-map type control-plane copp-system-policy
 class type control-plane copp-s-default
  police pps 100
 class type control-plane copp-s-ntp
  police pps 200
 class type control-plane copp-s-arprequest
  police pps 500
 class type control-plane copp-s-nd
  police pps 500
 class type control-plane copp-s-arpresponse
  police pps 500
 class type control-plane copp-s-bfd
  police pps 2300
 class type control-plane copp-s-lacp
  police pps 700
...
```

show policy-map interface

Displays policy map information for the specified interface.

Syntax

```
show policy-map interface {<interface name>|brief|control-plane|
ethernet <chassis number/port number>|port-channel <LAG number>|
vlan <VLAN number>} [input|output] [type {qos|queuing}]
```

where:

Parameter	Function
interface name	The name of the interface.
brief	Displays a short policy map summary for all interfaces.
control-plane	Displays Control Plane Protection (CoPP) packet level statistics.
ethernet *chassis number/port number*	Displays policy map information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Displays policy map information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays policy map information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
input	Displays input policy map information.
output	Displays output policy map information.
type qos	Displays Quality of Service (QoS) policy map information.
type queuing	Displays queuing policy map information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays policy map information for ethernet interface 1/12:

```
Switch> show policy-map interface ethernet 1/12

Global statistics status : disabled

Ethernet1/12

  Service-policy (queuing) output: default-out-policy

  Class-map (queuing):  1p7q1t-out-pq1 (match any)
 match cos 5-7
      priority level 1

  Class-map (queuing):  1p7q1t-out-q2 (match any)

  Class-map (queuing):  1p7q1t-out-q3 (match any)

  Class-map (queuing):  1p7q1t-out-q-default (match any)
 match cos 0-4
 match qos-group 0-7
      bandwidth remaining percent 25
```

Restrictions

For brief and control-plane parameters, the options below are unavailable:

- input
- output
- type qos
- type queuing

show policy-map type

Displays information only for the specified policy map type.

Syntax

`show policy-map type {control-plane|qos|queuing}`

where:

Parameter	Function
control-plane	Displays Control Plane Protection (CoPP) policy map information, including associated class map and rate limit.
qos	Displays Quality of Service (QoS) policy map information.
queuing	Displays queuing policy map information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays queuing policy map information:

```
Switch> show policy-map type queuing

Type queuing policy-maps
========================

policy-map type queuing default-out-policy
 class type queuing 1p7q1t-out-pq1
  priority level 1
 class type queuing 1p7q1t-out-q2
 class type queuing 1p7q1t-out-q3
 class type queuing 1p7q1t-out-q-default
  bandwidth remaining percent 25
```

show port-channel

Displays Link Aggregation Group (LAG) information.

Syntax

`show port-channel {capacity|compatibility-parameters|`
`|summary}`

where:

Parameter	Function
`capacity`	Displays LAG capacity resource information.
`compatibility-par ameters`	Displays LAG compatibility information.
`summary`	Displays LAG summary information.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.
10.2	Added **capacity** option.
10.2	Added **compatibility-parameters** option.

Example

The following command displays a short summary of all LAGs:

```
Switch> show port-channel summary

Flags:
D - Down       P - Up in port-channel (members)
S - Switched   R - Routed
I - Individual  s - Suspended
U - Up (port-channel)
------+-------------+--------+-------------------------------------------------
Group  port-channel  Protocol Member Ports
------+-------------+--------+-------------------------------------------------
100    po100       (SU)  NONE    Ethernet1/49(P) Ethernet1/50(P)
1000   po1000      (SU)  LACP    Ethernet1/1(P) Ethernet1/2(P)
2000   po2000      (SU)  LACP    Ethernet1/9(P) Ethernet1/10(P) Ethernet1/11(P)
                                 Ethernet1/12(P)
```

The following command displays LAG capacity resource information:

```
Switch> show port-channel capacity

port-channel resources
Available: 72 Used:  O( O%) Static:  O LACP:  O Free: 72
```

The following command displays port-channel compatibility information:

```
Switch> show port-channel compatibility-parameters

+-------------------+----------------------------------------------------
-----+
+ Parameters        + Description
+
+-------------------+----------------------------------------------------
-----+
 Port mode           Members must have the same port mode configured.
 Speed               Members must have the same speed.
 MTU                 Members must have the same MTU configured.
 Duplex Mode         Members must have same Duplex Mode.
 Storm Control       Members must have same storm control configured.
 Flow Control        Members must have same flow control.
 Capabilities        Members must have common capabilities.
 Capabilities speed   Members must have common speed capabilities.
 Capabilities duplex  Members must have common speed duplex capabilities.
 switchport          Members must be switchport, Layer 2.
 Port access VLAN     Members must have the same port access VLAN.
 Port native VLAN     Members must have the same port native VLAN.
 DOT1Q Tag Native VLAN  Members must have the same Dot1Q Tag native
configuration
 Port allowed VLAN    Members must have the same port allowed VLAN list.
 list
 Egress Tagged VLAN   Members must have the same Egress Tagged VLAN list.
 list
 Mac learn           Members must have the same mac learn configuration
  Subnet VLAN Control  Members must have same subnet VLAN control
configuration.
```

show port-channel load-balance

Displays Link Aggregation Group (LAG) hash configuration.

Syntax

show port-channel load-balance [forwarding-path interface port-channel *<LAG number>* **{[src-interface ethernet** *<chassis number/port number>*\] **[dst-mac** *<MAC address>*\] **[src-mac** *<MAC address>*\] **[dst-ip** *<IPv4 address>*\] **[src-ip** *<IPv4 address>*\] **[dst-ipv6** *<IPv6 address>*\] **[src-ipv6** *<IPv6 address>*\] **[l4-dst-port** *<layer 4 port>*\] **[l4-src-port** *<layer 4 port>*\]}]**

where:

Parameter	Function
`forwarding-path interface port-channel` *LAG number*	Displays hash configuration for the selected LAG that forwards a specified packet. The *LAG number* is from 1 to 4096.
`src-interface ethernet` *chassis number/port number*	Displays hash configuration for the specified source ethernet interface. The *chassis number* is 1.
`dst-mac` *MAC address*	Displays hash configuration for the specified destination MAC address.
`src-mac` *MAC address*	Displays hash configuration for the specified source MAC address.
`dst-ip` *IPv4 address*	Displays hash configuration for the specified destination IPv4 address.
`src-ip` *IPv4 address*	Displays hash configuration for the specified source IPv4 address.
`dst-ipv6` *IPv6 address*	Displays hash configuration for the specified destination IPv6 address.
`src-ipv6` *IPv6 address*	Displays hash configuration for the specified source IPv6 address.
`l4-dst-port` *layer 4 port*	Displays hash configuration for the specified destination layer 4 port. The *layer 4 port* range is from 0 to 65535.
`l4-src-port` *layer 4 port*	Displays hash configuration for the specified source layer 4 port. The *layer 4 port* range is from 0 to 65535.

Modes

All command modes.

The following command is available only in Privileged EXEC mode:

show port-channel load-balance forwarding-path

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LAG hash configuration:

```
Switch> show port-channel load-balance

Port Aggregation Load-Balancing Configuration:
System: source-dest-ip

Port Aggregation Load-Balancing Addresses Used Per-Protocol:
Non-IP: source-dest-mac
IP: source-dest-ip
```

show port-channel traffic

Displays Link Aggregation Group (LAG) traffic statistics.

Syntax

show port-channel traffic [interface port-channel *<LAG number or range>***]**

where:

Parameter	Function
`interface port-channel` *LAG number or range*	Displays traffic statistics for the specified LAG. The *LAG number* is from 1 to 4096.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LAG traffic statistics:

```
Switch> show port-channel traffic
AggId        Port Rx-Ucst Tx-Ucst Rx-Mcst Tx-Mcst Rx-Bcst Tx-Bcst
------ -------------- ------- ------- ------- ------- ------- -------
   100 Ethernet1/49/1   0.00%   0.00%   0.01%   0.01%   0.00%   0.00%
   100 Ethernet1/49/2   0.00%   0.00%  93.55%  93.81%   0.00%   0.00%
   100 Ethernet1/49/3   0.00%   0.00%   0.01%   0.01%   0.00%   0.00%
   100 Ethernet1/49/4   0.00%   0.00%   0.01%   0.01%   0.00%   0.00%
   100 Ethernet1/50/1   0.00%   0.00%   0.01%   0.01%   0.00%   0.00%
   100 Ethernet1/50/2   0.00%   0.00%   5.73%   0.02%   0.00%   0.00%
   100 Ethernet1/50/3   0.00%   0.00%   0.01%   5.70%   0.00%   0.00%
   100 Ethernet1/50/4   0.00%   0.00%   0.65%   0.42%   0.00%   0.00%
------ -------------- ------- ------- ------- ------- ------- -------
  1000 Ethernet1/1     0.00%   0.00%  89.43%  94.25%   0.00%   0.00%
  1000 Ethernet1/2     0.00%   0.00%  10.57%   5.75%   0.00%   0.00%
------ -------------- ------- ------- ------- ------- ------- -------
  2000 Ethernet1/9     0.00%   0.00%  24.62%  24.78%   0.00%   0.00%
  2000 Ethernet1/10    0.00%   0.00%  24.40%  25.55%   0.00%   0.00%
  2000 Ethernet1/11    0.00%   0.00%  26.69%  24.85%   0.00%   0.00%
  2000 Ethernet1/12    0.00%   0.00%  24.30%  24.82%   0.00%   0.00%
------ -------------- ------- ------- ------- ------- ------- -------
  4096 Ethernet1/25    0.00%   0.00% 100.00% 100.00%   0.00%   0.00%
```

show privilege

Displays the current user privilege level.

Syntax

```
show privilege
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the current user privilege level:

```
Switch> show privilege

Current privilege level is 1.

Switch> enable
Switch# show privilege

Current privilege level is 16.
```

show proc-names

Displays a list with the names of all running processes.

Syntax

```
show proc-names
```

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a list with the names of all running processes:

```
Switch# show proc-names

nsm
ospfd
hostpd
lacpd
mstpd
imi
onmd
HSL
oamd
vlogd
vrrpd
ndd
ribd
bgpd
hostmibd
l2mribd
hsl_ras_mgr
vlagd
```

show process

Displays a list with all running processes.

Syntax

`show process [cpu [history|sort]|memory]`

where:

Parameter	Function
`cpu`	Displays the CPU workload of running processes.
`history`	Displays the CPU utilization history.
`sort`	Displays process information sorted by CPU utilization, from highest to lowest.
`memory`	Displays memory statistics of running processes.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a list of all running processes:

```
Switch# show process

 PID NAME            TIME     FD
   1 nsm            5d22h58m 36
   4 ospfd          5d22h58m 22
   7 hostpd         5d22h58m 40
  14 lacpd          5d22h58m 24
  17 mstpd          5d22h58m 21
  24 onmd           5d22h58m 25
  26 hsl            5d22h58m 29
  28 oam            5d22h58m 37
  39 vrrpd          5d22h58m 27
  40 ndd            5d22h58m 39
  42 ribd           5d22h58m 20
  44 bgpd           5d22h58m 23
  45 hostmibd       5d22h58m 28
  46 l2mribd        5d22h58m 38
  47 hsl_ras_mgr    5d22h58m 30
  61 sysmgr         5d22h58m 34
  64 vlagd          5d22h58m 32
  65 slpd           5d22h58m 26
  70 npad           5d22h58m 31
  72 dhcpsnpd       5d22h58m 33
  73 telemetryd     5d22h58m 35
```

The following command displays process information sorted by CPU utilization:

```
Switch# show process cpu sort

PID    Runtime(ms)  Invoked   uSecs 1Sec   Process
-----  ------------ --------- ----- ------ --------
   26      74510350    913767 81541  4.3% hsl
   39       2014720 101786614    19  0.1% vrrpd
   68        953330    184851  5157  0.1% platform_mgr
    1        752590  32255358    23  0.0% nsm
    7        147610   1215118   121  0.0% hostpd
   69        147440    901810   163  0.0% service_mgr
   17         52740   1147294    45  0.0% mstpd
   44         42350   1192240    35  0.0% bgpd
   28         41530   1000875    41  0.0% oam
   14         38270   1141820    33  0.0% lacpd
   40         29530    231881   127  0.0% ndd
   24         28240    204605   138  0.0% onmd
   61         16810     88157   190  0.0% sysmgr
   64         13700      7534  1818  0.0% vlagd
   42          8860    114881    77  0.0% ribd
    4          8150    113379    71  0.0% ospfd
   45          7390    114099    64  0.0% hostmibd
   70          5310    212875    24  0.0% npad
   65          3890      7651   508  0.0% slpd
   46           480      8205    58  0.0% l2mribd
   73           350      8578    40  0.0% telemetryd
   72           280      7244    38  0.0% dhcpsnpd

CPU util  :   5.4% user,   1.2% kernel,   93.4% idle
```

The following command displays memory statistics of running processes:

```
Switch# show process memory

PID   MemAlloc StkSize   RSSMem  LibMem  StackBase/Ptr      Process
----- -------- --------- ------- ------- ------------------ ----------
    1    22832   8388608   11744    8896   aad460/aad008    nsm
    4    18816   8388608    5780    8880 beffb200/beffae08  ospfd
    7    92824   8388608    5960    8852 6ad27a70/6ad27630  hostpd
   14    18448   8388608    5616    8880   66efd0/66eba8    lacpd
   17    65164   8388608   36800    8880 dfede9d0/dfede5b0  mstpd
   24    18992   8388608    6096    8880 18329110/18328d08  onmd
   26  1522900   8388608  174948    8940 f152eb80/f152e790  hsl
   28    18560   8388608    5528    8880 e2549ce0/e2549888  oam
   39    37904   8388608    8376    8880 bf6cc150/bf6cbd40  vrrpd
   40    18632   8388608    4524    8852 5749fb10/5749f718  ndd
   42    18992   8388608    6028    8880 c85414b0/c8541048  ribd
   44    30764   8388608   17988    8896 7b398000/7b397ba8  bgpd
   45    18132   8388608    5084    8880   6bb0db0/6bb09a8  hostmibd
   46    56304   8388608   26064    8852 488b6590/488b6180  l2mribd
   61    18308   8388608    4612    8880 e7ecc4a0/e7ecc098  sysmgr
   64   249400   8388608   66948    8860   254c630/254c210  vlagd
   65    18292   8388608    3912    8852 2e303570/2e303168  slpd
   70    19036   8388608    6416   11492 8a450410/8a44fff8  npad
   72    18324   8388608    3284    8852 a4874ca0/a4874888  dhcpsnpd
   73    46724   8388608   27160   11452 5d6b8330/5d6b7f00  telemetryd
   68   256036   8388608    6360    5548 ccf77270/ccf76e60  platform_mgr
   69    82172   8388608    1932    2144 e88baa60/e88ba810  service_mgr
```

show queuing interface ethernet

Displays ethernet interface queuing information.

Syntax

show queuing interface ethernet *<chassis number/port number>*

where:

Parameter	Function
chassis number/port number	The ethernet interface chassis and port numbers. The *chassis number* is 1 and the *port number* depends on the switch type.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays queuing information for ethernet interface 1/1:

```
Switch> show queuing interface ethernet 1/1

Egress Queuing for Ethernet Ethernet1/1 [System]
-------------------------------------------------------------------------
Template: 4Q8E
-------------------------------------------------------------------------
Que#        Group        Bandwidth   PrioLevel   Shape%    CoSMap
-------------------------------------------------------------------------
0           0-7          -           -           -         0-4
1           -            -           High        -         5-7
2           -            -           -           -         -
3           -            -           -           -         -
4           -            -           -           -         -
5           -            -           -           -         -
6           -            -           -           -         -
7           -            -           -           -         -
```

show restApi server

Displays the status of the Representational State Transfer (REST) server and the listening port number.

Syntax

show restApi server

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the status of the rest server and the listening port number:

```
Switch> show restApi server

rest server enabled port: 443
restApi pki rest_mgmt vrf management
restApi pki rest_default vrf default
```

Please refer to *Lenovo REST API Programming Guide* for details on how to use the Lenovo REST API.

show rib

Displays Routing Information Base (RIB) information.

Syntax

`show rib {bgp forwarding-timer|client|ipc stats|ospf forwarding-timer|txlist}`

where:

Parameter	Function
bgp forwarding-timer	Displays BGP forwarding-timer statistics.
client	Displays user statistics.
ipc stats	Displays inter-process communication (IPC) statistics.
ospf forwarding-timer	Displays OSPF forwarding-timer statistics.
txlist	Displays text list statistics.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays RIB IPC statistics:

```
Switch> show rib ipc stats

Total Async Messages sent : 2
Total Async Messages Rcvd : 2
Total Bulk Messages sent  : 2
Total Bulk Messages Rcvd  : 2
Total Buffers Allocated   : 2
Bulking is in progress    : Yes
Acknowledged Buffers      : 2
UnAcknowledged Buffers    : O
Total Buffers not found   : O
Total Timeout's sent      : O
Current Buffer Usage      : O%
Last Message sent         : Fri Jan  8 04:58:50 2016

Last Message Rcvd         : Fri Jan  8 04:58:50 2016
```

show role

Displays the user role configuration.

Syntax

show role [name *<role name>***]**

where:

Parameter	Function
name *role name*	Displays the user role configuration for the specified role. The *role name* can be either *network-admin* or *network-operator*.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays user role configuration:

```
Switch> show role

Role : network-admin
  Description: Predefined network admin role has access to all commands
  on the switch
-----------------------------------------------------------------------
Rule    Perm   Type          Scope            Entity
-----------------------------------------------------------------------
1       permit  read-write

Role : network-operator
  Description: Predefined network operator role has access to all read
  commands on the switch
-----------------------------------------------------------------------
Rule    Perm   Type          Scope            Entity
-----------------------------------------------------------------------
1       permit  read
```

show route-map

Displays user readable route-map information.

Syntax

show route-map [<*route map name*>**]**

where:

Parameter	Function
route map name	The name of the route map.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays route map information:

```
Switch# show route-map
route-map A, permit, sequence 10
  Match clauses:
    ip address prefix-list: pf_1
    community: commlist_1
  Set clauses:
    as-path prepend 1234
route-map A, deny, sequence 20
  Match clauses:
    as-path: as_acl_1
  Set clauses:
route-map A, permit, sequence 30
  Match clauses:
  Set clauses:
    metric 20
route-map local_pref, permit, sequence 10
  Match clauses:
    ip next-hop prefix-list: pf_2
    origin: igp
  Set clauses:
    local-preference 150
    weight 400
```

show router-id

Displays the configured router ID.

Syntax

show router-id

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the configured router ID:

```
Switch> show router-id
Router ID: 20.211.2.2 (automatic)
```

show routing

Displays routing information.

Syntax

show routing [<*IPv4 address***/***prefix length*>**|all|bgp|connected|
next-hop|ospf|static|summary|vrf {all|default|management}]**

show routing database [all|bgp|connected|ospf|static]

show routing interface [<*interface name*>**|ethernet** <*chassis number***/***port
number*>**|loopback** <*loopback interface*>**|mgmt** <*management
interface*>**|port-channel** <*LAG number*>**|vlan** <*VLAN number*>**]**

show routing {ip|ipv4|ipv6} [<*IP network address*>**|**<*prefix
length*>**|all|bgp|connected|database|interface|next-hop|ospf|
|static|vrf {all|default|management}]**

where:

Parameter	Function
IPv4 address	Displays routing information for routes associated with a specific network from the IP routing table.
prefix length	Displays routing information for routes associated with a specific IP and a specific network mask.
all	Displays routing information for all routes.
bgp	Displays routing information for routes associated with Border Gateway Protocol (BGP).
connected	Displays routing information for connected routes only.
next-hop	Displays routing information for the specified next hop address in IPv4 address format.
ospf	Displays routing information for Open Shortest Path First (OSPF) routes.
static	Displays routing information for static routes only.
summary	Displays a summary of all routes.
vrf all	Displays routing information for routes associated with any Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays routing information for routes associated with the default VRF instance.
vrf management	Displays routing information for routes associated with the management VRF instance.
interface name	The name of the interface.

Parameter	Function
ethernet *chassis number/port number*	Displays routing information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays routing information for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays routing information for the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays routing information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays routing information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
ip	Displays routing information for routes associated with Internet Protocol version 4 and 6.
ipv4	Displays routing information for routes associated with Internet Protocol version 4.
ipv6	Displays routing information for routes associated with Internet Protocol version 6.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays routing information:

```
Switch> show routing
Codes: C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area, D - DHCP
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       * - candidate default

IP Route Table for VRF "default"
B       1.1.1.0/24 [200/0] via 23.1.1.2, Vlan23, 00:00:59
C       23.1.1.0/24 is directly connected, Vlan23
C       24.1.1.0/24 is directly connected, Vlan24
S       45.0.0.0/8 [1/0] via 113.0.0.105, Vlan113
                   [1/0] via 24.1.1.2, Vlan24
O E1    57.61.0.0/24 [110/125] via 23.1.1.2, Vlan23, 00:27:44
B       100.0.0.0/24 [20/0] via 113.0.0.100, Vlan113, 00:15:07
B       100.0.1.0/24 [20/0] via 113.0.0.100, Vlan113, 00:31:18
C       113.0.0.0/24 is directly connected, Vlan113
O       116.0.0.0/24 [110/124] via 23.1.1.2, Vlan23, 00:34:45
O IA    117.1.1.1/32 [110/124] via 23.1.1.2, Vlan23, 00:34:35
B       145.45.0.0/16 [200/0] via 23.1.1.2, Vlan23, 00:01:02
O E2    190.20.20.20/32 [110/20] via 23.1.1.2, Vlan23, 00:05:07
C       192.168.1.2/32 is directly connected, loopback0

Gateway of last resort is not set
```

show routing hash

Displays the route that the unicast Routing Information Base (RIB) Forwarding Information Base (FIB) uses for a source and destination address pair.

Syntax

show routing hash *<source address>* *<destination address>* **[ip-proto** *<IP protocol>***] [***<source port>* *<destination port>***] [vrf {***<VRF instance>***|default}]**

where:

Parameter	Function
source address	The IPv4 address of the source.
destination address	The IPv4 address of the destination.
ip-proto *IP protocol*	Displays routing information for the specified IPv4 protocol. The *IP protocol* is from 1 to 255.
source port	The port number of the source. The *source port* is from 1 to 65535.
destination port	The port number of the destination. The *destination port* is from 1 to 65535.
vrf *VRF instance*	Displays routing information for routes associated with the specified Virtual Routing and Forwarding (VRF) instance.
vrf default	Displays routing information for routes associated with the default VRF instance.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays routing information:

```
Switch> show routing hash
```

show running-config

Displays the running configuration.

Syntax

```
show running-config [aaa [all]|access-list|aclmrg [all]|arp
[all]|as-path access-list|bfd|bgp|community-list|
|dhcp|diff|dns|hsc vtep|ipqos [all]|key chain|lacp|lldp
|logging|monitor [all]|ntp [all]|ospf|prefix-list|radius
|restApi server|route-map|router-id|security [all]|snmp|
|spanning-tree|ssh server|syslog|tacacs+|telnet server|vlag|
|vlan {<VLAN number>|classifier}|vrf <VRF
instance>|vrrp|vdm|ldap|sflow]|teaming
```

where:

Parameter	Function
aaa	Displays only the Authentication, Authorization and Accounting (AAA) running configuration.
all	Displays the running configuration for the specified process, including the default values.
access-list	Displays only the Access Control List (ACL) running configuration.
aclmrg	Displays only the Access Control List (ACL) manager running configuration.
arp	Displays only the Address Resolution Protocol (ARP) running configuration.
as-path access-list	Displays only the autonomous system (AS) path filter running configuration.
bfd	Displays only the Bidirectional Forwarding Detection (BFD) running configuration.
bgp	Displays only the Border Gateway Protocol (BGP) running configuration.
community-list	Displays only the community list running configuration.
dhcp	Displays only the Dynamic Host Configuration Protocol (DHCP) running configuration.
diff	Displays only the difference between startup and running configurations.
dns	Displays only the Domain Name Service (DNS) running configuration.
hsc vtep	Displays only the HSC VTEP mode configuration.

Parameter	Function
ipqos	Displays only the IP Quality of Service (QoS) running configuration.
key chain	Displays the authentication key management running configuration.
lacp	Displays only the Link Aggregation Control Protocol (LACP) running configuration.
ldap	Displays only the Lightweight Directory Access Protocol (LDAP) running configuration.
lldp	Displays only the Link Layer Discovery Protocol (LLDP) running configuration.
logging	Displays only the syslog running configuration.
monitor	Displays only the Ethernet Switch Port Analyzer (SPAN) session running configuration.
ntp	Displays only the Network Time Protocol (NTP) running configuration.
ospf	Displays only the Open Shortest Path First (OSPF) running configuration.
prefix-list	Displays only the prefix list running configuration.
radius	Displays only the current RADIUS configuration.
restApi server	Displays only the REpresentational State Transfer (REST) server running configuration.
route-map	Displays only the route map running configuration.
router-id	Displays only the router ID running configuration.
security	Displays only the security running configuration.
snmp	Displays only the Simple Network Management Protocol (SNMP) running configuration.
spanning-tree	Displays only the Multiple Spanning Tree Protocol (MSTP) running configuration.
ssh server	Displays only the Secure Shell (SSH) server running configuration.
syslog	Displays only the syslog running configuration.
sFlow	Displays only the sFlow running configuration.
tacacs+	Displays only the Terminal Access Controller Access-Control System Plus (TACACS+) running configuration.
teaming	Displays only teaming running configuration.

Parameter	Function
telnet server	Displays only the Telnet running configuration.
vdm	Displays only the Virtual Domain Plugin (VDM) running configuration.
vlag	Displays only Virtual Link Aggregation Group (VLAG) running configuration.
vlan *VLAN number*	Displays only the specified Virtual LAN (VLAN) running configuration. The *VLAN number* is from 1 to 4094.
vlan classifier	Displays only VLAN classification-related information.
vrf *VRF instance*	Displays only the specified Virtual Routing and Forwarding (VRF) instance running configuration.
vrrp	Displays only the Virtual Router Redundancy Protocol (VRRP) running configuration.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.
10.3	Added **radius** option.
10.5	Added **hsc vtep** option.
10.6	Added **ldap, sflow, vlan classifier, teaming** options.

Restrictions

This hsc vtep option only applies to the following switches:

● RackSwitch G8332

● RackSwitch G8272

● RackSwitch G8296

● RackSwitch NE2572

● RackSwitch NE10032

Example

The following command displays the current running configuration of the switch:

```
Switch> show running-config
!
version "10.6.1.0"
!
vrf context management
 ip route 0.0.0.0/0 10.10.10.1
!
!
no ip icmp-broadcast
restApi pki rest_mgmt vrf management
restApi pki rest_default vrf default
feature restApi
ovsdb pki ovsdb_mgmt vrf management
ovsdb pki ovsdb_default vrf default
no ip arp timeout refresh
feature sflow
!
ip access-list  copp-system-acl-authentication
 11 remark tcpPermit_
 21 remark Permits UDP 1812
 22 remark Permits UDP 1812
 31 remark Permits UDP 1813
ip access-list  copp-system-acl-ping
 5 deny icmp host 10.72.101.5 host 10.241.27.39
ip access-list  test1
!
interface Ethernet1/1
 switchport mode hybrid
 switchport hybrid allowed vlan 10,12-100
!
interface Ethernet1/2
!
interface Ethernet1/3
...
```

Restrictions

In User EXEC mode only the following command parameters are available:

- `aaa [all]`
- `aclmgr [all]`
- `arp [all]`
- `dhcp`
- `hsc vtep`
- `ipqos [all]`
- `logging`
- `monitor [all]`
- `ntp [all]`
- `restApi server`
- `security [all]`
- `snmp`
- `ssh server`
- `tacacs+`
- `telnet server`
- `vlag`

show running-config interface

Displays only interface running configuration.

Syntax

show running-config interface [<*interface name*>**|ethernet** <*chassis number*>**/***port number*>**|loopback** <*loopback interface*>**|mgmt** <*management interface*>**|port-channel** <*LAG number*>**|vlan** <*VLAN number*>**]**
[lacp|mstp|ospf]

where:

Parameter	Function
interface name	The name of the interface.
ethernet *chassis number/port number*	Displays running configuration only for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
loopback *loopback interface*	Displays running configuration only for the specified loopback interface. The *loopback interface* is from 0 to 7.
mgmt *management interface*	Displays running configuration only for the specified management interface. The *management interface* is 0.
port-channel *LAG number*	Displays running configuration only for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays running configuration only for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
lacp	Displays interface running configuration only for Link Aggregation Control Protocol (LACP).
mstp	Displays interface running configuration only for Multiple Spanning Tree Protocol (MSTP).
ospf	Displays interface running configuration only for Open Shortest Path First (OSPF).

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the running configuration for management interface 0:

```
Switch# show running-config interface mgmt 0

!
interface mgmt0
 no switchport
 vrf member management
 no ip address dhcp
 ip address 10.241.41.21/25
```

show running-config ip

Displays IPv4 running configuration.

Syntax

`show running-config ip [igmp snooping|route]`

where:

Parameter	Function
igmp snooping	Displays Internet Group Management Protocol (IGMP) snooping running configuration.
route	Displays static IPv4 route running configuration.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv4 running configuration:

```
Switch# show running-config ip
!
ip route 0.0.0.0/0 10.241.39.254
ip route 84.0.0.0/24 15.0.0.1
ip route 84.0.1.0/24 15.0.0.1
ip route 84.0.2.0/24 15.0.0.1
ip route 84.0.3.0/24 15.0.0.1
ip route 84.0.4.0/24 15.0.0.1
ip route 84.0.5.0/24 15.0.0.1
!
!
interface Ethernet1/13
 ip address 13.1.1.2/16
!
!
interface Ethernet1/14
 ip address 14.1.1.2/24
!
!
interface Ethernet1/20
 ip address 1.1.0.1/16
!
!
interface loopback0
 ip address 4.4.4.4/32
!
!
interface mgmt0
 no ip address dhcp
 ip address 10.241.39.135/25
!
!
interface Vlan10
 ip address 94.1.1.1/24
!
```

show running-config ipv6

Displays IPv6 running configuration.

Syntax

`show running-config ipv6 [neighbor [all]]|prefix-list|route]`

where:

Parameter	Function
neighbor	Displays static IPv6 neighbor running configuration.
all	Displays static IPv6 neighbor running configuration, including default values.
prefix-list	Displays prefix list running configuration.
route	Displays static IPv6 route running configuration.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays IPv6 running configuration:

```
Switch> show running-config ipv6
!
ipv6 route 3333::/64 5011::2
ipv6 route 3334::/64 5011::2
ipv6 route 3335::/64 5011::2
!
!
interface Ethernet1/20
ipv6 address 5011::1/64
!
!
interface Vlan10
ipv6 address 2001::4/64
!
```

Restriction

In User EXEC mode, the only available command is:

● **`show running-config ipv6 [neighbor [all]]`**

show running-config router

Displays running configuration for routing network protocols.

Syntax

`show running-config router {bgp|ospf}`

where:

Parameter	Function
bgp	Displays Border Gateway Protocol (BGP) running configuration.
ospf	Displays Open Shortest Path First (OSPF) running configuration.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays BGP running configuration:

```
Switch# show running-config router bgp
!
router bgp 64800
 cluster-id 11
 timers bgp 10 30
 address-family ipv4 unicast
  maximum-paths ibgp 32
  redistribute direct
 neighbor 9.3.11.1 remote-as 64800
  advertisement-interval 0
  bfd
  address-family ipv4 unicast
   route-reflector-client
 neighbor 20.111.1.1 remote-as 64800
  advertisement-interval 0
  bfd
  address-family ipv4 unicast
   route-map peer-address in
 neighbor 20.111.2.1 remote-as 64800
  advertisement-interval 0
  bfd
  address-family ipv4 unicast
   route-map peer-address in
 neighbor 20.211.1.1 remote-as 64800
  advertisement-interval 0
  bfd
  address-family ipv4 unicast
   route-map peer-address in
 neighbor 20.211.2.1 remote-as 64800
  advertisement-interval 0
  bfd
  address-family ipv4 unicast
   route-map peer-address in
!
```

show running-config switch

Displays running configuration for switch network processes.

Syntax

show running-config switch {lacp|mstp}

where:

Parameter	Function
lacp	Displays Link Aggregation Control Protocol (LACP) running configuration.
mstp	Displays Multiple Spanning Tree Protocol (MSTP) running configuration.

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays LACP running configuration:

```
Switch# show running-config switch lacp
```

show script

Displays a list of all installed python scripts.

Syntax

show script [<*script name*>**|running]**

where:

Parameter	Function
script name	Displays the contents of the specified user python script.
running	Displays detailed information about all currently running python scripts.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a list of all installed python scripts:

```
Switch# show script
```

show script-job

Displays user defined jobs.

Syntax

```
show script-job
```

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays user defined jobs:

```
Switch# show script-job
```

show script-log

Displays the log file of all user script executions.

Syntax

show script-log [<*script log file*>**]**

where:

Parameter	Function
log file	Displays the specified user script execution log file.

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the log file of all user script executions:

```
Switch# show script-log
```

show sflow

Displays sFlow configuration information.

Syntax

show sflow [interface ethernet *‹range›* **| statistics]**

where:

Parameter	Function
range	Displays sFlow information for the specified interfaces.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays sFlow information:

```
Switch# show sflow
sFlow sampling-rate:    4096
sFlow max-sampled-size: 128
sFlow polling-interval: 60
sFlow max-datagram-size: 1500
sFlow collector-ip:     0.0.0.0
sFlow collector-port:   6343
sFlow collector-vrf:    data
```

show snmp

Displays Simple Network Management Protocol (SNMP) information.

Syntax

show snmp [community|engine-id|group|host|trap|user|view]

where:

Parameter	Function
community	Displays SNMP community information.
engine-id	Displays SNMP engine ID information.
group	Displays SNMP group information.
host	Displays SNMP host information.
trap	Displays SNMP trap information.
user	Displays SNMP user information.
view	Displays SNMP view information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays SNMP information:

```
Switch> show snmp

sys Contact:
sys Location:

-----------------------------------------------------------------
Community                       Group/Access      Context
-----------------------------------------------------------------


_____
                        SNMP USERS
_____
User                            Auth      Priv(enforce)
Groups
_____

SNMP Tcp-session :Disabled


SNMP Protocol:Enabled
```

show spanning-tree

Displays Spanning Tree Protocol (STP) information.

Syntax

```
show spanning-tree [blockedports|inconsistentports|
|pathcost method|summary [totals]]
```

where:

Parameter	Function
blockedports	Displays ports blocked by STP.
inconsistentports	Displays ports that are in an inconsistent STP state.
pathcost method	Displays STP path cost calculation method.
summary	Displays summary STP information.
totals	Displays only the STP totals information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays STP information:

```
Switch> show spanning-tree
VLAN0001
  spanning-tree enabled protocol rapid-pvst
  ROOT ID     priority    32769
              address     a48c.db95.4900
              This bridge is the root
              Hello Time  2   Max age 20  Forward Delay 15

  BRIDGE ID   priority    32769 (32768 sys-id-ext 1)
              address     a48c.db95.4900
              Hello Time  2   Max age 20  Forward Delay 15

Interface       Role Sts cost      Prio.Nbr      Type
--------------- ---- --- --------- ------------- ---------------------
po1             Desg FWD 2000      128.100001    Edge point-to-point
po4096          Desg FWD 666       128.104096    point-to-point
Ethernet1/32    Desg FWD 2000      128.410032    Edge point-to-point

VLAN0002
  spanning-tree enabled protocol rapid-pvst
  ROOT ID     priority    32770
              address     a48c.db95.4900
              This bridge is the root
              Hello Time  2   Max age 20  Forward Delay 15
```

show spanning-tree active

Displays information about Spanning Tree Protocol (STP) active interfaces.

Syntax

`show spanning-tree active [brief|detail]`

where:

Parameter	Function
brief	Displays a summary information about STP active interfaces.
detail	Displays a detailed information about STP active interfaces.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays information about STP active interfaces:

```
Switch> show spanning-tree active
MST0000
  spanning-tree enabled protocol mstp
  ROOT ID       priority    32768
                address     a897.dcf7.dd00
                Cost        500
                Port        100001 (po1)
                Hello Time  2   Max age 20  Forward Delay 15

  BRIDGE ID     priority    32768 (32768 sys-id-ext 0)
                address     a897.dcf7.f000
                Hello Time 10   Max age 40  Forward Delay 30

Interface        Role Sts cost     Prio.Nbr     Type
---------------- ---- --- --------- ------------ ---------------------
po1              Root FWD 500       128.100001   point-to-point
Ethernet1/48     Desg FWD 20000     128.410480   Edge point-to-point

MST0001
  spanning-tree enabled protocol mst
  ROOT ID       priority    32769
                address     a897.dcf7.dd00
                Cost        500
                Port        100001 (po1)
                Hello Time 10   Max age 40  Forward Delay 30

  BRIDGE ID     priority    32769 (32768 sys-id-ext 1)
                address     a897.dcf7.f000
                Hello Time 10   Max age 40  Forward Delay 30

Interface        Role Sts cost     Prio.Nbr     Type
---------------- ---- --- --------- ------------ ---------------------
po1              Root FWD 500       128.100001   point-to-point
Ethernet1/48     Desg FWD 20000     128.410480   Edge point-to-point

MST0002
  spanning-tree enabled protocol mst
  ROOT ID       priority    32770
                address     a897.dcf7.dd00
                Cost        500
                Port        100001 (po1)
                Hello Time 10   Max age 40  Forward Delay 30

  BRIDGE ID     priority    32770 (32768 sys-id-ext 2)
                address     a897.dcf7.f000
                Hello Time 10   Max age 40  Forward Delay 30

Interface        Role Sts cost     Prio.Nbr     Type
---------------- ---- --- --------- ------------ ---------------------
po1              Root FWD 500       128.100001   point-to-point
Ethernet1/48     Desg FWD 20000     128.410480   Edge point-to-point
```

show spanning-tree bridge

Displays the status and configuration of Spanning Tree Protocol (STP) local bridge.

Syntax

```
show spanning-tree bridge [address|brief|detail|
|forward-time|hello-time|id|max-age|priority [system-id]|
|protocol]
```

where:

Parameter	Function
address	Displays the MAC address of the STP local bridge.
brief	Displays a brief STP information summary of the local bridge.
detail	Displays a detailed STP information of the local bridge.
forward-time	Displays the Forward Delay interval which specifies the amount of time in seconds needed for a port to change its state from Listening to Learning of from Learning to Forwarding.
hello-time	Displays the time interval in seconds at which the STP bridge transmits configuration Bridge Protocol Data Units (BPDUs).
id	Displays the STP local bridge ID.
max-age	Displays the time a BPDU is stored before it is removed. If the max-age timer expires before receiving a new BPDU, the associated interface transitions to the listening state.
priority	Displays the bridge priority of the STP local bridge.
system-id	Displays the bridge priority and the system ID extension of the STP local bridge.
protocol	Displays which STP protocol is active.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays STP local bridge information:

```
Switch> show spanning-tree bridge
                                                Hello  Max  Fwd
Vlan                      Bridge ID             Time  Age  Dly  Protocol
---------------- -------------------------------- ----- --- --- --------
VLAN0001          32769 (32768,01) a48c.db95.4900   2   20   15  rpvst+
VLAN0002          32770 (32768,02) a48c.db95.4900   2   20   15  rpvst+
VLAN0003          32771 (32768,03) a48c.db95.4900   2   20   15  rpvst+
VLAN0004          32772 (32768,04) a48c.db95.4900   2   20   15  rpvst+
VLAN0005          32773 (32768,05) a48c.db95.4900   2   20   15  rpvst+
VLAN0006          32774 (32768,06) a48c.db95.4900   2   20   15  rpvst+
VLAN0007          32775 (32768,07) a48c.db95.4900   2   20   15  rpvst+
```

show spanning-tree brief

Displays a brief Spanning Tree Protocol (STP) information summary.

Syntax

show spanning-tree brief [active]

where:

Parameter	Function
active	Displays information only for STP active interfaces.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a brief STP information summary:

```
Switch> show spanning-tree brief
MST0000
  spanning-tree enabled protocol mstp
  ROOT ID      priority   32768
               address    a897.dcf7.dd00
               Cost       500
               Port       100001 (po1)
               Hello Time  2   Max age 20  Forward Delay 15

  BRIDGE ID    priority   32768 (32768 sys-id-ext 0)
               address    a897.dcf7.f000
               Hello Time 10   Max age 40  Forward Delay 30
Interface       Role Sts cost      Prio.Nbr     Type
--------------- ---- --- --------- ------------ ---------------------
po1             Root FWD 500       128.100001   point-to-point
Ethernet1/48    Desg FWD 20000     128.410480   Edge point-to-point

MST0001
  spanning-tree enabled protocol mst
  ROOT ID      priority   32769
               address    a897.dcf7.dd00
               Cost       500
               Port       100001 (po1)
               Hello Time 10   Max age 40  Forward Delay 30

  BRIDGE ID    priority   32769 (32768 sys-id-ext 1)
               address    a897.dcf7.f000
               Hello Time 10   Max age 40  Forward Delay 30

Interface       Role Sts cost      Prio.Nbr     Type
--------------- ---- --- --------- ------------ ---------------------
po1             Root FWD 500       128.100001   point-to-point
Ethernet1/48    Desg FWD 20000     128.410480   Edge point-to-point

MST0002
  spanning-tree enabled protocol mst
  ROOT ID      priority   32770
               address    a897.dcf7.dd00
               Cost       500
               Port       100001 (po1)
               Hello Time 10   Max age 40  Forward Delay 30

  BRIDGE ID    priority   32770 (32768 sys-id-ext 2)
               address    a897.dcf7.f000
               Hello Time 10   Max age 40  Forward Delay 30

Interface       Role Sts cost      Prio.Nbr     Type
--------------- ---- --- --------- ------------ ---------------------
po1             Root FWD 500       128.100001   point-to-point
Ethernet1/48    Desg FWD 20000     128.410480   Edge point-to-point
```

show spanning-tree detail

Displays a detailed Spanning Tree Protocol (STP) information.

Syntax

`show spanning-tree detail [active]`

where:

Parameter	Function
active	Displays information only for STP active interfaces.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a detailed STP information summary:

```
Switch> show spanning-tree detail

MST0000 is executing the mst compatible Spanning-tree protocol
  Bridge Identifier has priority 32768, sysid 0, address a897.dcf7.f000
  Configured  hello time 10 max age 40 forward delay 30
  Current root has priority 32768 address a897.dcf7.dd00
  Topology change flag not set, - topology change detected
  Number of topology change(s) 26   - last change occured Thu Feb 18
15:31:01 20
16

Interface po1 of MST0000 is Root forwarding
  Port path cost 500  port priority 128 port identifier 100001
  Designated root has priority 32768, address a897.dcf7.dd00
  Designated bridge has priority 61440, address 0817.f4c3.dd01
  Timers: message age 5 forward delay 0 hold 0
  Link type is point-to-point
  BPDU: sent 41   received 520


Interface Ethernet1/48 of MST0000 is designated forwarding
  Port path cost 20000  port priority 128 port identifier 410480
  Designated root has priority 32768, address a897.dcf7.dd00
  Designated bridge has priority 32768, address a897.dcf7.f000
  Timers: message age 0 forward delay 0 hold 0
  Link type is Edge point-to-point
  Bpdu filter is enabled
  The port type is edge
  BPDU: sent 0   received 0
.........
```

show spanning-tree ecp

Displays Virtual Link Aggregation Group (VLAG) - Multiple Spanning Tree Protocol (MSTP) Edge Control Protocol (ECP) information.

Syntax

```
show spanning-tree ecp {channels|statistics|
upper-layer-protocols}
```

where:

Parameter	Function
channels	Displays ECP channel information.
statistics	Displays ECP statistics.
upper-layer-proto cols	Displays upper layer protocols active in ECP.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a list of ECP channels:

```
Switch> show spanning-tree ecp channels
---- ECP CHANNELS ----
Ifindex   Ena    State      NextSeq    LastAck   FreeWindow
--------+----------------+-----------+---------+------------
100003    1      0          65520      65519      999
```

show spanning-tree interface

Displays Spanning Tree Protocol (STP) interface information.

Syntax

show spanning-tree interface {ethernet *<chassis number/port number>***|port-channel** *<LAG number>***} [brief|detail]**

where:

Parameter	Function
ethernet *chassis number/port number*	Displays STP information only for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
port-channel *LAG number*	Displays STP information only for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
brief	Displays a brief STP information summary.
detail	Displays a detailed STP interface information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays STP information for ethernet interface 1/48:

```
Switch> show spanning-tree interface ethernet 1/48

Mst Instance     Role Sts cost      priority Type
---------------- ---- --- --------- --------- --------------------------
MST0000          Desg FWD 20000     128       Edge point-to-point
MST0001          Desg FWD 20000     128       Edge point-to-point
MST0002          Desg FWD 20000     128       Edge point-to-point
MST0003          Desg FWD 20000     128       Edge point-to-point
```

show spanning-tree internal event-history

Displays Spanning Tree Protocol (STP) event logs.

Syntax

```
show spanning-tree internal event-history {all|
|buffer-size|deleted|errors|msgs|tree <spanning tree ID>
[all-ports|interface {ethernet <chassis number/port number>|
|port-channel <LAG number>}]}
```

where:

Parameter	Function
`all`	Displays all STP event logs.
`buffer-size`	Displays memory allocation statistics for STP event logs.
`deleted`	Displays deleted STP trees and ports event logs.
`errors`	Displays STP error event logs.
`msgs`	Displays STP messages.
`tree` *spanning tree ID*	Displays STP event logs for the specified spanning tree. The *spanning tree ID* is: ● for CIST is 0 ● for MSTP is the instance number from 0 to 64 ● for Rapid PVST+ is the VLAN number from 1 to 4094
`all-ports`	Displays STP event logs for all ports.
`interface ethernet` *chassis number/port number*	Displays STP event logs only for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface port-channel` *LAG number*	Displays STP event logs only for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays all STP event logs:

```
Switch> show spanning-tree internal event-history all

Event: msgs, length:19, at 440026 usecs after Fri Jan  8 04:58:33 2016
 interface mgmt0 add
Event: msgs, length:23, at 440344 usecs after Fri Jan  8 04:58:33 2016
 interface loopback0 add
Event: msgs, length:19, at 440432 usecs after Fri Jan  8 04:58:33 2016
 interface Vlan1 add
Event: msgs, length:25, at 440524 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/1 add
Event: msgs, length:25, at 440638 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/2 add
Event: msgs, length:25, at 440736 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/3 add
Event: msgs, length:25, at 440832 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/4 add
Event: msgs, length:25, at 440929 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/5 add
Event: msgs, length:25, at 441042 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/6 add
Event: msgs, length:25, at 441139 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/7 add
Event: msgs, length:25, at 441235 usecs after Fri Jan  8 04:58:33 2016
 interface Ethernet1/8 add
Event: msgs, length:25, at 441345 usecs after Fri Jan  8 04:58:33 2016
```

show spanning-tree internal info tree

Displays Spanning Tree Protocol (STP) internal information.

Syntax

show spanning-tree internal info tree *<spanning tree ID>*
[all-ports|interface {ethernet *<chassis number/port number>***|**
port-channel *<LAG number>***}**

where:

Parameter	Function
spanning tree ID	Displays STP internal information for the specified spanning tree. The *spanning tree ID* is: ● for CIST is 0 ● for MSTP is the instance number from 0 to 64 ● for Rapid PVST+ is the VLAN number from 1 to 4094
all-ports	Displays STP internal information for all ports.
interface ethernet *chassis number/port number*	Displays STP internal information only for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays STP internal information only for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays STP internal information:

```
Switch> show spanning-tree internal info tree 1
------- STP Tree Info (tree 1) ---------
port_list                          Ethernet1/54(410540)
Ethernet1/53(410530)
                                   Ethernet1/50(410500)
Ethernet1/49(410490)
                                   Ethernet1/48(410480)
Ethernet1/47(410470)
                                   Ethernet1/46(410460)
Ethernet1/45(410450)
                                   Ethernet1/44(410440)
Ethernet1/43(410430)
                                   Ethernet1/42(410420)
Ethernet1/41(410410)
                                   Ethernet1/40(410400)
Ethernet1/39(410390)
.......
vlan_list                          1
fid_list
instance_id                        1
low_port                           3
master                             false
learning_enabled                   true
msti_mastered                      false
reselect                           false
msti_bridge_id                     80:01:a8:97:dc:f7:f0:00
msti_bridge_priority               32768
recent_root                        100001
br_inst_all_rr_timer_cnt           0
msti_designated_root               80:01:a8:97:dc:f7:dd:00
msti_designated_bridge             f0:01:08:17:f4:c3:dd:01
internal_root_path_cost            500
designated_internal_root_path_cost 0
msti_root_port_id                  34465
root_inst_port                     po1(100001)
msti_root_port_ifindex             100001
port_index                         0
hop_count                          18
tc_flag                            true
topology_change_detected           true
time_last_topo_change              Thu Jan  1 03:11:52 1970
num_topo_changes                   5
total_num_topo_changes             5
tc_initiator                       34465
tc_last_rcvd_from                  08:17:f4:c3:dd:01
is_te_instance                     0
```

show spanning-tree mst

Displays Multiple Spanning Tree Protocol (MSTP) information.

Syntax

show spanning-tree mst [<*MST instance*>**] [interface {ethernet** <*chassis number*/*port number*>**|port-channel** <*LAG number*>**}] [detail]**

where:

Parameter	Function
MST instance	Displays MSTP information for the specified instance. The *MST instance* is from 0 to 64. A range of instances can also be added (e.g. 7-9).
interface ethernet *chassis number*/*port number*	Displays MSTP information only for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays MSTP information only for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
detail	Displays detailed MSTP information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays MSTP information:

```
Switch> show spanning-tree mst
##### MST0    vlans mapped:   4-4094
Bridge       address a897.dcf7.f000  priority    32768 (32768 sysid 0)
Root         address a897.dcf7.dd00  priority    32768 (32768 sysid 0)
             port    po1             path cost   0
Regional Root address a897.dcf7.dd00  priority    32768 (32768 sysid 0)
                                     internal cost 500      rem hops 18
Operational  hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured   hello time 10, forward delay 30, max age 40, max hops    64

Interface       Role Sts cost     Prio.Nbr      Type
--------------- ---- --- --------- ------------- ---------------------
po1             Root FWD 500       128.100001    point-to-point
Ethernet1/48    Desg FWD 20000     128.410480    Edge point-to-point

##### MST1    vlans mapped:   1
Bridge       address a897.dcf7.f000  priority    32769 (32768 sysid 1)
Root         address a897.dcf7.dd00  priority    32769 (32768 sysid 1)
             port    po1             cost        500      rem hops 18

Interface       Role Sts cost     Prio.Nbr      Type
--------------- ---- --- --------- ------------- ---------------------
po1             Root FWD 500       128.100001    point-to-point
Ethernet1/48    Desg FWD 20000     128.410480    Edge point-to-point
..........
```

show spanning-tree mst configuration

Displays Multiple Spanning Tree Protocol (MSTP) configuration information.

Syntax

show spanning-tree mst configuration [digest]

where:

Parameter	Function
digest	Displays the MSTP digest.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays MSTP configuration information:

```
Switch> show spanning-tree mst configuration
Name    [region]
Revision 65535 Instances configured 3
Instance  Vlans mapped
--------
-------------------------------------------------------------------------
0       4-4094
1       1
2       2
3       3
-------------------------------------------------------------------------
```

show spanning-tree vlan

show STP information for the specified VLAN(s).

Syntax

show spanning-tree vlan *<VLAN ID>* **[active|brief|**
|detail|summary|interface {ethernet *<chassis number/port number>***|**
|port-channel *<LAG number>***} {brief|detail}]**

where:

Parameter	Function
vlan *VLAN ID*	Displays STP information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
active	Displays only active interfaces.
brief	Displays a short interface configuration summary.
detail	Displays detailed interface information.
summary	Displays a summary of STP information.
interface ethernet *chassis number/port number*	Displays STP VLAN information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays STP VLAN information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays STP information for VLAN 1:

```
Switch> show spanning-tree vlan 1
VLAN0001
  spanning-tree enabled protocol rapid-pvst
  ROOT ID     priority   32769
              address    a48c.db95.4900
              This bridge is the root
              Hello Time  2   Max age 20  Forward Delay 15

  BRIDGE ID   priority   32769 (32768 sys-id-ext 1)
              address    a48c.db95.4900
              Hello Time  2   Max age 20  Forward Delay 15


Interface        Role Sts cost      Prio.Nbr     Type
---------------- ---- --- --------- ------------ ---------------------
po1             Desg FWD 2000       128.100001  Edge point-to-point
po4096          Desg FWD 666        128.104096   point-to-point
Ethernet1/32    Desg FWD 2000       128.410032  Edge point-to-point
```

The following command displays detailed STP information for VLAN 1:

```
Switch> show spanning-tree vlan 1 detail
Vlan0001 is executing the rpvst compatible Spanning-tree protocol
  Bridge Identifier has priority 32768, sysid 1, address a48c.db95.4900
  Configured  hello time 2 max age 20 forward delay 15
  We are the root of the spanning-tree
  Topology change flag not set,  Detected flag not set
  Number of topology change(s) 6   - last change occured Fri Oct 13
09:05:30 201
7

 Interface po1 of VLAN0001 is designated forwarding
  Port path cost 2000  port priority 128 port identifier 128.1697
  Designated root has priority 32769, address a48c.db95.4900
  Designated bridge has priority 32769, address a48c.db95.4900
  Timers: message age 0 forward delay 0 hold 0
  Link type is Edge point-to-point
  The port type is edge
  BPDU: sent 168, received 0

 Interface po4096 of VLAN0001 is designated forwarding
  Port path cost 666  port priority 128 port identifier 128.5792
  Designated root has priority 32769, address a48c.db95.4900
  Designated bridge has priority 32769, address a48c.db95.4900
```

show ssh

Displays Secure Shell (SSH) information.

Syntax

show ssh {key|server}

where:

Parameter	Function
key	Displays the SSH key.
server	Displays SSH server configuration.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the SSH key:

```
Switch> show ssh key

*****************RSA KEY*********************
 ssh-rsa  AAAAB3NzaC1yc2EAAAADAQABAAAABAQC99oI5p+qJN98rSnnZOKY/MK1A9LeF4LN9AZOlcW
ax6r/5ibBznX6Q4gFPY6/yrwcV1ULZNbisC8rxM8Dvq/m6CGnxqZZrwrTeYmlBX3XGjDcc4jK2L3rmXc
wgSqAviSe4i2NfabvK9zyaPfkBefEPaTOeCedkvE7+vpUhJT7x6qklUxdosam6qOPZ7QsAB+XeE8ngDw
IUioHmZgzOC1VYi3P1zCQlkUnyHXqknvDpTR9HWGU3TA9Jnr1TgBS5/aaZexUOHaOgyPNNZRBI5QrDkZ
BTOWg1qcaakc3HrbVRxoVpm6fgS3gAt8teCpZ1sCyYaMWK8CHQiGHlkjMIZ/Yb

 bitcount: 2048 fingerprint: 0a:79:bc:e7:f4:fb:28:09:19:5a:a4:ff:e4:de:98:3f

*************************************
*****************DSA KEY*********************
 ssh-dsa  AAAAB3NzaC1kc3MAAACBAK6XyWuMFiWJcdABLeF3klmv9zK61KZ9yM5pZKYiiIZukYotrY
G1t6XLVzwjPgjpZWm/IaWGjGjUNTHykL9FrcDPi+18bmGWxJ/FtZ6BnduLQjLmTu1YppFOLUNHx2BXoR
p3vNbo7KXOyCnbOX6RNKsv6xcka6RrKPlZPPbA+cdNAAAAFQDPJCqVVhqv8mKNic1gdZLDKNSqiwAAAI
BqO32fymIiOzbWpRXJqv9OG/gKdKeSAVN4OIfL4RlD/CPSDMwKVugakiMi+K1nfCFTTOIWI88qtbfNRc
Nzsmamot7rnTXsL9ICdBxPs+MvQROoG+/UJ3iwGlTGjya1tbVsT4q2TwNtwrJMoroMCzMFMBf+1VnqyL
qUse/2Od5CrAAAAIEAmMAK5PSU+YblPf1kT8Ith4K2EciOmnoUBO6euXSZMuodtEW2v4wxWh78a5bN4R
Ee6nHgFAcftWEvjTmR7QqznTy2FJbUkhF++u6XoGOxpLf2hEEClVRR662veQpXI39oyBE1zV8OqABv5f
lo2g9DqQyOSZkUTVn/kYpCol9eOJA=

 bitcount: 1024 fingerprint: 77:c0:d3:71:7d:9c:26:28:9d:8b:fd:7d:55:63:e8:50

*************************************
```

The following command displays SSH server configuration:

```
Switch> show ssh server

ssh server enabled port: 22
authentication-retries 3
```

show startup-config

Displays the startup configuration.

Syntax

show startup-config

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the startup configuration:

```
Switch# show startup-config

!
version "10.7.2.0"
!
logging console 6
logging level l2mrib 3
vrf context default
!
vrf context management
 ip route 0.0.0.0/0 10.241.41.1
!
microburst-detection interval 100
!
no ip icmp-broadcast
control-plane  service-policy input copp-system-policy
no feature telnet
feature ssh
no feature tacacs+
snmp-server enable snmp
snmp-server view all .1 included
username admin role network-admin password encrypted
$6$bJoW9I4/$JyaAhMzHRMdQNEO
xwW4R5FZKykmDMlm1tpQrnAA2NE54Y2tbjlIvCfBy//pZhvUFhEOsdipwc5Bra2GvcQYrU1
no feature restApi
spanning-tree mode mst
...
```

show statistics microburst

Displays microburst detection statistics.

Syntax

show statistics microburst [interface ethernet *<chassis number/port number>***]**

where:

Parameter	Function
interface ethernet *chassis number/port number*	Displays microburst detection statistics only for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
	If no interface is specified, the command displays statistics for all ethernet interfaces where microburst detection is enabled.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays microburst detection statistics:

```
Switch> show statistics microburst
-------------------------------------------------------------------------
Interface       # of uburst  avg size  max size  avg duration  max
duration
-------------------------------------------------------------------------
-------
Ethernet1/8             0         0         0             0
0
```

show switchname

Displays the switch's name.

Syntax

```
show switchname
```

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the switch's name:

```
Switch# show switchname

G8272
```

show sys-info

Displays the boot file and hardware environment status information.

Syntax

```
show sys-info
```

Modes

- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the boot file and hardware environment status information:

```
Switch# show sys-info
*** show boot ***
Current ZTP State: Enable
Current FLASH software:
  active image: version 10.6.1.0, downloaded 11:28:28 UTC Fri Nov 24 2017
  standby image: version 10.6.1.0, downloaded 09:38:50 UTC Thu Nov 23
2017
  Uboot: version 10.6.0.67, downloaded 11:28:30 UTC Fri Nov 24 2017
  ONIE: version 10.1.0.52, downloaded 15:10:31 UTC Fri Dec 11 2015
Currently set to boot software active image
Current port mode:
        Port Ethernet1/49 is set in 10G mode
        Port Ethernet1/50 is set in 10G mode
        Port Ethernet1/51 is set in 10G mode
        Port Ethernet1/52 is set in 10G mode
        Port Ethernet1/53 is set in 10G mode
        Port Ethernet1/54 is set in 10G mode
Next boot port mode: default mode

Currently scheduled reboot time: none


*** show env fan detail ***
Total Fan: 8
+--------+-----+----------------+--------------+-------+--------+
| Module | Fan | Name           | Air-Flow     | Speed | Speed  |
| Number | ID  |                | Direction    | (%)   | (RPM)  |
+--------+-----+----------------+--------------+-------+--------+
  01       01    Fan1             Front-to-Back   23      4299
  01       02    Fan2             Front-to-Back   23      4545
  02       03    Fan3             Front-to-Back   23      4372
  02       04    Fan4             Front-to-Back   23      4591
  03       05    Fan5             Front-to-Back   23      4069
  03       06    Fan6             Front-to-Back   23      4455
  04       07    Fan7             Front-to-Back   23      4186
  04       08    Fan8             Front-to-Back   23      4448
```

```
*** show env power ***
Total Power Supplies: 2
+----+----------------+---------------+----------------+----------------
--+
| ID | Name           | Manufacturer  | Model          | State
|
+----+----------------+---------------+----------------+----------------
--+
  O1   Power Supply 1   DELTA            XXXXXXXXXX       Normal ON
  O2   Power Supply 2   DELTA            XXXXXXXXXX       12V Output
Fault


*** show env temperature ***
+----+-----------------+----------+--------+
| ID | Name            | Temp     | State  |
|    |                 | (Celsius)|        |
+----+-----------------+----------+--------+
  O1   CPU Local         32          OK
  O2   Ambient           35          OK
  O3   Hot Spot          49          OK

System Name                   : G8272
System Description            : G8272 ("48x1OGE + 6x4OGE")
System Model                  : Lenovo RackSwitch G8272
System VPD Version            : 3
System Manufacture Date       : 1440 (YYWW)
System Part Number            : OOCJO66
System Serial Number          : YO52MV49YOO7
System FRU Number             : OOFM43O
System Machine Type Model     : 7159-HCV
System Machine Serial Number  : 4557635787
System Hardware Revision      : 1
System Management MAC         : A8:97:DC:DD:E9:OO
System Software Revision      : 10.6.1.0
```

show system

Displays system related information.

Syntax

```
show system {cores|internal ipfib errors|reset-reason|
resources|uptime|vlan reserved}
```

where:

Parameter	Function
cores	Displays core transfer option information.
internal ipfib errors	Displays error logs for IPFIB.
reset-reason	Displays the reason of the most recent switch reload.
resources	Displays overall system resources.
uptime	Displays the time since the switch running time.
vlan reserved	Displays the range of reserved Virtual LANs (VLANs).

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays overall system resources:

```
Switch# show system resources

load average: 0.10, 0.19, 0.25
Tasks:  91 total,   1 running,  90 sleeping,   0 stopped,   0 zombie
Cpu(s):  5.9%us, 6.7%sy, 0.0%ni, 87.4%id, 0.0%wa, 0.0%hi, 0.0%si, 0.0%st
Mem:   4086612k total, 1137884k used, 2948728k free,    33624k buffers
```

The following command displays the reserved VLAN range:

```
Switch> show system vlan reserved
Configured reserved VLANs range: 4000-4093
Note: VLAN 4094 is always reserved for internal use.
```

Restriction

In User EXEC mode, the only available command is:

- **show system vlan reserved**

In Global Configuration mode, the only available commands are:

- **show system internal ipfib errors**
- **show system uptime**

show teaming profile

Displays teaming profile settings and status.

Syntax

show teaming profile [<*profile ID*>**] [information]**

where:

Parameter	Description
profile ID	The teaming profile number; an integer from 1-200.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays teaming profile status and setting:

```
Switch# show team profile 5 information
Teaming profile 5 Manual Monitor: Enabled
Teaming profile 5 limit: 150
Monitor Forward Number: O
Member            Status
----------------  ----------------
Ethernet1/10      Non-Forward

Control State: Triggered
Member            Status
----------------  ----------------
Ethernet1/1       Err-Dis
```

show tacacs-server

Displays Terminal Access Controller Access-Control System Plus (TACACS+) server information.

Syntax

show tacacs-server [<*server address*>**|groups** <*group name*>**|sorted|**
statistics <*server address*>**]**

where:

Parameter	Function
server address	Displays information about the specified TACACS+ server. The *server address* can be either an IPv4 address or an IPv6 address.
groups	Displays TACACS+ server group configuration information.
group name	Displays TACACS+ server configuration information for the specified group.
sorted	Displays TACACS+ server information sorted alphabetically by name.
statistics	Displays TACACS+ server statistics.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays TACACS+ server information:

```
Switch> show tacacs-server
```

show tech-support

Displays all system related information and process configurations by automatically running various commands.

Syntax

```
show tech-support [aaa|arp [brief]|bfd|bgp [brief]|
|startupvar|brief|commands|dhcp|forwarding|icmpv6|interfaces
|
|interfaces-vlan|ip [igmp snooping] [brief]|ipv6|lacp [all]|
|lldp|logging|microburst|ntp|obs|ospf|platform|port-agent|
|port-channel|port-manager|process|rib|snmp|ssh server|
|stp|summary
[page-optimized]|tacacs+|teaming|telemetry|telnet
server|um|vdm|vlag|vlan|vrrp [brief]] [page]
```

where:

Parameter	Function
page	Displays the command output a page at a time. If not used, the output scrolls until all the pre-configured commands are ran. To stop the command execution press **<Ctrl + C>**.
aaa	Displays all Authentication, Authorization and Accounting (AAA) related information and configurations.
arp	Displays all Address Resolution Protocol (ARP) related information and configurations.
bfd	Displays all Bidirectional Forwarding Detection (BFD) related information and configurations.
bgp	Displays all Border Gateway Protocol (BGP) related information and configurations.
startupvar	Displays all startup related information and configurations.
brief	Displays a short information summary.
commands	Displays the list of commands automatically run by **show tech-support**.
dhcp	Displays all Dynamic Host Configuration Protocol (DHCP) related information and configurations.
forwarding	Displays all forwarding related information and configurations.
icmpv6	Displays all Internet Control Message Protocol version 6 (ICMPv6) related information and configurations.

Parameter	Function
`interfaces`	Displays all interface related information and configurations.
`interfaces-vlan`	Displays all VLAN interface related information and configurations.
`ip`	Displays all IPv4 related information and configurations.
`igmp snooping`	Displays all Internet Group Management Protocol (IGMP) snooping related information and configurations.
`ipv6`	Displays all IPv6 related information and configurations.
`lacp`	Displays Link Aggregation Control Protocol (LACP) related information and configurations.
`all`	Displays all Link Aggregation Control Protocol (LACP) related information and configurations.
`lldp`	Displays all Link Layer Discovery Protocol (LLDP) related information and configurations.
`logging`	Displays all logging related information and configurations.
`microburst`	Displays all microburst detection related information and configurations.
`ntp`	Displays all Network Time Protocol (NTP) related information and configurations.
`obs`	Displays all Python Scripting related information and configurations.
`ospf`	Displays all Open Shortest Path First (OSPF) related information and configurations.
`platform`	Displays all platform related information and configurations.
`port-agent`	Displays all port agent related information and configurations.
`port-channel`	Displays all Link Aggregation Group (LAG) related information and configurations.
`port-manager`	Displays all port manager related information and configurations.
`process`	Displays information and configurations relating to all running processes.
`rib`	Displays all Routing Information Base (RIB) related information and configurations.

Parameter	Function
snmp	Displays all Simple Network Management Protocol (SNMP) related information and configurations.
ssh server	Displays all Secure Shell (SSH) server related information and configurations.
stp	Displays all Spanning Tree Protocol (STP) related information and configurations.
summary	Displays a short information summary.
page-optimized	Uses less system memory and disk space while gathering information.
tacacs+	Displays all Terminal Access Controller Access-Control System Plus (TACACS+) related information and configurations.
teaming	Displays all teaming related information and configuration.
telemetry	Displays all Telemetry service related information and configurations.
telnet server	Displays all Telnet server related information and configurations.
um	Displays all user management related information and configurations.
vdm	Displays all Virtual Domain Manager (VDM) related information and configuration.
vlag	Displays all Virtual Link Aggregation Group (VLAG) related information and configurations.
vlan	Displays all Virtual LAN (VLAN) related information and configurations.
vrrp	Displays all Virtual Router Redundancy Protocol (VRRP) related information and configurations.

Modes

● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **teaming** option.
10.7	Added the **vdm** option.

Example

The following command displays all system related information and process configurations by automatically running various commands:

```
Switch# show tech-support

*** show running-config security ***
!Command: show running-config security
!Time:2016 Jan 1O 14:11:44

NOSX version 1O.7.2.O LENOVO G8272, Thu Jan 14 1O:34:2O PST 2O16
username admin role network-admin password encrypted
$6$bJoW9I4/$JyaAhMzHRMdQNEO
xwW4R5FZKykmDMlm1tpQrnAA2NE54Y2tbjlIvCfBy//pZhvUFhEOsdipwc5Bra2GvcQYrU1
ssh key rsa 2O48


*** show role ***
Role : network-admin
  Description: Predefined network admin role has access to all commands
  on the switch
-----------------------------------------------------------------------
Rule    Perm    Type          Scope                 Entity
-----------------------------------------------------------------------
1       permit  read-write

Role : network-operator
  Description: Predefined network operator role has access to all read
  commands on the switch
-----------------------------------------------------------------------
Rule    Perm    Type          Scope                 Entity
-----------------------------------------------------------------------
1       permit  read



*** show user-account ***
User:admin
        role: network-admin
...
```

show telemetry bst-congestion port-drops

Displays Buffer Statistics Tracking (BST) per-port drop counters.

Syntax

show telemetry bst-congestion port-drops [interface ethernet *<slot>-<chassis>***]**

where:

Parameter	Description
slot-chassis	The slot and chassis of a specific ethernet interface.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays BST per-port drop counters:

```
Switch> show telemetry bst-congestion port-drops
Timestamp                             : 2017-11-28 - 12:34:03
Request identifier                    : 10001
Ports reported                        : 57
------------------------------------
interface               counter
------------------------------------
Ethernet1/1                     0
Ethernet1/2                     0
Ethernet1/3                     0
Ethernet1/4                     0
Ethernet1/5                     0
Ethernet1/6                     0
Ethernet1/7                     0
Ethernet1/8                     0
Ethernet1/9                     0
Ethernet1/10                    0
Ethernet1/11                    0
Ethernet1/12                    0
Ethernet1/13                    0
Ethernet1/14                    0
Ethernet1/15                    0
Ethernet1/16                    0
…
```

show telemetry bst-congestion port-queue-drops

Displays Buffer Statistics Tracking (BST) per-port drop counters.

Syntax

show telemetry bst-congestion port-queue-drops [interface ethernet *<slot>-<chassis>***] [queue** *<queue number>***] [queue-type** *<queue type>***]**

where:

Parameter	Description
slot-chassis	The slot and chassis of a specific ethernet interface.
queue number	(Optional) Queue number; an integer from 0-7. Default value: all queues.
queue type	(Optional) Queue type to be included. One of: ● all: Unicast and multicast traffic queues (default) ● mcast: Multicast traffic queues ● ucast: Unicast traffic queues

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays BST per-port drop counters:

```
Switch> show telemetry bst-congestion port-queue-drops
Timestamp                         : 2017-11-28 - 12:34:27
Request identifier                : 10001
(port, queue) entries reported    : 912
------------------------------------------------------------
interface       queue      queue-type           counter
------------------------------------------------------------
Ethernet1/1     0          ucast                      0
Ethernet1/1     0          mcast                      0
Ethernet1/1     1          ucast                      0
Ethernet1/1     1          mcast                      0
Ethernet1/1     2          ucast                      0
Ethernet1/1     2          mcast                      0
Ethernet1/1     3          ucast                      0
Ethernet1/1     3          mcast                      0
Ethernet1/1     4          ucast                      0
Ethernet1/1     4          mcast                      0
Ethernet1/1     5          ucast                      0
Ethernet1/1     5          mcast                      0
Ethernet1/1     6          ucast                      0
Ethernet1/1     6          mcast                      0
Ethernet1/1     7          ucast                      0
Ethernet1/1     7          mcast                      0
Ethernet1/2     0          mcast                      0
Ethernet1/2     0          ucast                      0
Ethernet1/2     1          mcast                      0
Ethernet1/2     1          ucast                      0
Ethernet1/2     2          mcast                      0
Ethernet1/2     2          ucast                      0
Ethernet1/2     3          mcast                      0
Ethernet1/2     3          ucast                      0
Ethernet1/2     4          mcast                      0
Ethernet1/2     4          ucast                      0
….
```

show telemetry bst-congestion top-drops

Displays Buffer Statistics Tracking (BST) congestion counters for ports with top drops.

Syntax

show telemetry bst-congestion top-drops [count *<count>***]**

where:

Parameter	Description
count	The number of ports to include in the output. The default value is 64.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays BST congestion counters for ports with top drops.:

```
Switch> show telemetry bst-congestion top-drops
Timestamp                           : 2017-11-28 - 12:36:42
Request identifier                  : 10001
Top ports with congestion drops     : 12
------------------------------------
interface                 counter
------------------------------------
Ethernet1/38              34050300
Ethernet1/50/1            30175385
Ethernet1/46              30175285
Ethernet1/44              30175235
Ethernet1/42              30175194
```

show telemetry bst-congestion top-port-queue-drops

Displays Buffer Statistics Tracking (BST) congestion counters for pairs (port, queue) with top drops.

Syntax

show telemetry bst-congestion top-port-queue-drops [count *<value>***]**

[queue-type *<queue type>***]**

where:

Parameter	Description
value	Number of pairs (ports, queue) required in the report; an integer from 1-64.
queue type	(Optional) Queue type to be included. One of: ● all: Unicast and multicast traffic queues (default) ● mcast: Multicast traffic queues ● ucast: Unicast traffic queues

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays BST congestion counters for pairs (port, queue) with top drops:

```
Switch> show telemetry bst-congestion top-port-queue-drops count 2
Timestamp                            : 2017-11-28 - 12:37:06
Request identifier                   : 10001
Top (port, queue) with congestion drops : 2
-----------------------------------------------------------
interface      queue      queue-type          counter
-----------------------------------------------------------
Ethernet1/38   0          mcast               391259695
Ethernet1/50/1 0          mcast               346689172
```

show telemetry bst-feature

Displays Buffer Statistics Tracking (BST) configuration information.

Syntax

show telemetry bst-feature

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays BST configuration information:

```
Switch> show telemetry bst-feature

BST Enabled               : disabled
Send Async Reports        : disabled
Collection Interval       : 60 seconds
Stats in Percentage       : enabled
Stat Units in Cells       : disabled
Trigger Rate Limit        : 1
Trigger Rate Limit Interval : 10 seconds
Send Snapshot on Trigger  : enabled
Async Full Reports        : disabled
```

show telemetry bst-report

Displays Buffer Statistics Tracking (BST) statistics information.

Syntax

show telemetry bst-report {*<realm>***}**

where:

Element	Description
realm	One of the following: ● ingress-port-priority-group ● ingress-port-service-pool ● ingress-service-pool ● egress-port-service-pool ● egress-service-pool ● egress-rqe-queue ● egress-cpu-queue ● egress-mc-queue ● egress-uc-queue ● device
ingress-port-priority-group	Retrieve the ingress port priority group statistics.
ingress-port-service-pool	Retrieve the ingress port service pool statistics.
ingress-service-pool	Retrieve the ingress service pool statistics.
egress-port-service-pool	Retrieve the egress port service pool statistics.
egress-service-pool	Retrieve the egress service pool statistics.
egress-rqe-queue	Retrieve the egress RQE queue statistics.
egress-cpu-queue	Retrieve the egress CPU queue statistics.
egress-mc-queue	Retrieve the egress MC queue statistics.

Element	Description
egress- uc-queue	Retrieve the egress UC queue statistics.
device	Retrieve the device statistics.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays BST statistics information:

```
Switch> show telemetry bst-report device

Timestamp          : 2017-11-28 - 12:48:01
Data unit          : percentage
Device buffer count : 59
```

show telemetry bst-thresholds

Displays Buffer Statistics Tracking (BST) thresholds information.

Syntax

show telemetry bst-thresholds {*<realm>***}**

where:

Element	Description
realm	One of the following: ● `ingress-port-priority-group` ● `ingress-port-service-pool` ● `ingress-service-pool` ● `egress-port-service-pool` ● `egress-service-pool` ● `egress-rqe-queue` ● `egress-cpu-queue` ● `egress-mc-queue` ● `egress-uc-queue` ● `device`
`ingress-port-priority-group`	Retrieve the ingress port priority group thresholds.
`ingress-port-service-pool`	Retrieve the ingress port service pool thresholds.
`ingress-service-pool`	Retrieve the ingress service pool thresholds.
`egress-port-service-pool`	Retrieve the egress port service pool thresholds.
`egress-service-pool`	Retrieve the egress service pool thresholds.
`egress-rqe-queue`	Retrieve the egress RQE queue thresholds.
`egress-cpu-queue`	Retrieve the egress CPU queue thresholds.
`egress-mc-queue`	Retrieve the egress MC queue thresholds.

Element	Description
`egress-uc-queue`	Retrieve the egress UC queue thresholds.
`device`	Retrieve the device thresholds.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays BST thresholds information:

```
Switch> show telemetry bst-thresholds ingress-port-priority-group

Timestamp       : 2017-11-28 - 12:46:31
Data unit       : percentage
-----------------------------------------------
interface       priority-group       um-share
-----------------------------------------------
Ethernet1/1     7                         100
Ethernet1/2     7                         100
Ethernet1/3     7                         100
Ethernet1/4     7                         100
Ethernet1/5     7                         100
Ethernet1/6     7                         100
Ethernet1/7     7                         100
Ethernet1/8     7                         100
Ethernet1/9     7                         100
Ethernet1/10    7                         100
Ethernet1/11    7                         100
Ethernet1/12    7                         100
Ethernet1/13    7                         100
Ethernet1/14    7                         100
Ethernet1/15    7                         100
Ethernet1/16    7                         100
Ethernet1/17    7                         100
Ethernet1/18    7                         100
Ethernet1/19    7                         100
Ethernet1/20    7                         100
Ethernet1/21    7                         100
Ethernet1/22    7                         100
Ethernet1/23    7                         100
Ethernet1/24    7                         100
Ethernet1/25    7                         100
Ethernet1/26    7                         100
Ethernet1/27    7                         100
Ethernet1/28    7                         100
Ethernet1/29    7                         100
Ethernet1/30    7                         100
Ethernet1/31    7                         100
Ethernet1/32    7                         100
...
```

show telemetry bst-tracking

Displays Buffer Statistics Tracking (BST) tracking information.

Syntax

show telemetry bst-tracking

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays BST tracking information:

```
Switch> show telemetry bst-tracking
Track Peak Stats                    : disabled
Track Device                        : enabled
Track Ingress Port Priority Group   : enabled
Track Ingress Port Service Pool     : enabled
Track Ingress Service Pool          : enabled
Track Egress CPU Queue              : enabled
Track Egress MC Queue               : enabled
Track Egress Port Service Pool      : enabled
Track Egress RQE Queue              : enabled
Track Egress Service Pool           : enabled
Track Egress UC Queue               : enabled
```

show telemetry information

Displays telemetry agent information, including information relating to the configured controller and heartbeat messages.

Syntax

```
show telemetry information
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays telemetry agent information:

```
Switch> show telemetry information

Telemetry admin status   : enabled
Telemetry oper status    : up
Heartbeat status         : enabled
Heartbeat interval       : 30
Controllers configured   : 1
Controller O:
    IP address           : 10.240.177.235
    TCP port             : 80
    VRF                  : management
    Protocol             : HTTP
```

show telemetry switch-properties

Displays telemetry information describing the capabilities of the switch, which includes parameters such as supported telemetry options, agent IP address, network operating system and more.

Syntax

```
show telemetry switch-properties
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.4	The command was introduced.

Example

The following command displays telemetry switch information:

```
Switch> show telemetry switch-properties

Timestamp            : 2017-03-31 07:16:00
Number of ASICs      : 1
ASIC 0:
    Notation         : 1
    Type             : BCM56760
    Ports            : 54
Supported features   : BST
Network OS           : CNOS
Unique identifier    : 0000a48cdb951e00
Agent IP address     : 10.241.30.234
Agent TCP port       : 8080
Agent software version : 2017.03.01.1
```

show telnet server

Displays Telnet server information.

Syntax

```
show telnet server
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays telnet server information:

```
Switch> show telnet server

telnet server disabled port: 23
```

show terminal

Displays terminal configuration for the current session.

Syntax

show terminal

Modes

Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays terminal configuration for the current session:

```
Switch# show terminal

TTY: /dev/ttyS0 Type: vt100-nam
Length: 24 lines, Width: 80 columns
Session Timeout: 600 seconds
```

show user-account

Displays the current user role configurations.

Syntax

show user-account [<*account name*>**]**

where:

Parameter	Function
account name	The name of the user's account.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the current user role configurations:

```
Switch> show user-account

User:admin
        role: network-admin
```

show users

Displays the currently logged in users.

Syntax

```
show users
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the currently logged in users:

```
Switch> show users

Line     User          Time                          Up Time   PID   Comment
console  admin         Fri Jan  8 05:13:39 2016  00:04:25  3696  --
```

show vdm information

Displays Virtual Domain Manager (VDM) information.

Syntax

show vdm information [nutanix|vmware]

where:

Parameter	Description
nutanix	Displays VDM information only for Nutanix Cloud Manager.
vmware	Displays VDM information only for VMware Cloud Manager.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.
10.7	Added the **vmware** option.

Example

The following command displays VDM information:

```
Switch> show vdm information
Owner: nutanix
Version:
Topology startup delay : 90
Virtual Machine VNIC Statistics : Disabled
Virtual Machine VNIC Statistics Interval : 30


Owner: vmware
Connection state of vCenter: Connected
Version: 6.5
IP Address: 10.241.31.3 vrf management
Username: administrator@vsphere.local
Virtual Machine VNIC Statistics : Enabled
Virtual Machine VNIC Statistics Interval : 600
Interfaces
     po1 po2

Queueing Policies

VM Name : Win-1
   VNIC Qualifier   : VLAN 505
   Queueing Policy  : cmap4
```

show version

Displays information about the running Cloud Network OS.

Syntax

show version

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays information about the running CNOS:

```
Switch> show version

Lenovo Networking Operating System (NOS) Software
Technical Assistance Center: http://www.lenovo.com
Copyright (C) Lenovo, 2016.  All rights reserved.

Software:
  startuploader version: 10.7.2.0
  System version: 10.7.2.0
  System compile time: Tue Jan 19 10:28:02 PST 2016

Hardware:
  G8272 ("48x10GE + 6x40GE")
  NXP P2020 CPU with 4096 MB of memory

  Device name: G8272
  Boot Flash: 16 MB

Kernel uptime is 0 day(s), 0 hour(s), 21 minute(s), 47 second(s)

Last Reset Reason: Reset by CLI reload command
```

show virtual-machine information

Shows Virtual Machine (VM) information.

Syntax

show [vmware] virtual-machine information [interface {all|ethernet *<chassis number/port number>***|port-channel** *<LAG number>***}| vm {name** *<VM name>* **| uuid** *<VM UUID>***}]**

show [vmware] virtual-machine {security-policy|qos-policy|queueing-policy} information [vm {name *<VM name>* **| uuid <***VM UUID***>}]**

show [vmware] virtual-machine vnic statistics [interface {all | ethernet *<chassis number/port number>* **| port-channel** *<PA number>***} | vm {name** *<VM name>* **| uuid** *<VM UUID>***}]**

where:

Parameter	Description
vmware	Displays VMware related information only.
interface	Displays VM information for a switch interface.
all	show VM information for all switch ethernet ports and Link Aggregation Groups (LAGs).
ethernet *chassis number/port number*	Displays VM information for the specified ethernet port.
port-channel *LAG number*	Displays VM information for the specified LAG. *LAG number* is an integer from 1 to 4096.
vm *name/uuid*	Displays VM information for the specified Virtual Machine identified by its name or its Universally Unique Identifier (UUID).
security-policy	Displays ACL policy information.
qos-policy	Displays QoS policy information
queueing-policy	Displays queueing policy information.
VM name	The Virtual Machine name, in quotes.
VM UUID	The VM UUID.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.
10.7	Added the **vmware** option.

Example

The following command shows VM information for Nutanix:

```
Switch> show virtual-machine information interface port-channel 1
Interface po1
uuid: 67669b5d-db2d-458f-ae8d-8334c9e8d0d8
    name: Win-1
    description: descp7
        host_reference:
            kind: host
            uuid: d899b03a-d926-4b5e-b4fa-1f0eaf9457f4
        num_cores_per_vcpu: 1
        hypervisor_type: AHV
        memory_size_mb: 4096
        num_vcpus: 2
        power_state: POWERED_ON
        nic_list:
            kind: network
            uuid: 0d932759-7c2a-46b4-8a1e-6dba6646b628
            mac_address: 50:6B:8D:24:E6:64
```

The following command shows VM information for VMware:

```
Switch> show vmware virtual-machine information interface ethernet 1/1/1
Interface Ethernet1/1/1
uuid: 42394a17-084f-2929-250e-67b985df0fc4
    name: VM1_95
        host_reference:
            kind: host
            uuid: a01ce1e1-3184-e611-854b-0894ef25a433
        num_cores_per_vcpu: 1
        memory_size_mb: 8192
        num_vcpus: 3
        power_state: poweredOn
        nic_list:
            kind: subnet
            connected_state: connected
            network_name: User_VLAN10
            nic_type: E1000
            mac_address: 00:50:56:B9:3C:81

            kind: subnet
            connected_state: connected
            network_name: User_VLAN5
            nic_type: E1000
            mac_address: 00:50:56:B9:17:4E

            kind: subnet
            connected_state: connected
            network_name: USER_VLAN55
            nic_type: VMXNET 3
            mac_address: 00:50:56:B9:27:94

            kind: subnet
            connected_state: connected
            network_name: USER_VLAN0
            nic_type: VMXNET 2
            mac_address: 00:50:56:B9:C3:B0

            kind: subnet
            connected_state: connected
            network_name: User_VLANAll
            nic_type: VMXNET 3
            mac_address: 00:50:56:B9:83:14
```

The following command shows VM information for VMware:

```
Switch> show vmware virtual-machine information interface port-channel 1
Interface po1
uuid: 42393bbd-d34b-77b1-3cb2-c4ccd641bd73
    name: Win-1
        host_reference:
            kind: host
            uuid: 0e056c6c-0284-e611-a495-0894ef25a88b
        num_cores_per_vcpu: 1
        memory_size_mb: 8192
        num_vcpus: 1
        power_state: poweredOn
        nic_list:
            kind: subnet
            connected_state: connected
            network_name: User_VLAN505
            nic_type: E1000e
            mac_address: 00:50:56:B9:EF:68
```

The following command shows vNIC statistics for VMware:

```
Switch> show vmware virtual-machine vnic statistics

Interface Ethernet1/2/2

VM uuid  : 4239c9fe-8ea2-0d61-4207-797c2c991007
VM name  : VM1_94
VNIC mac : 00:50:56:B9:C7:3D

  Time of capture   :2018/03/12 14:41:10
  RX Bytes        :0                TX Bytes        :0
  RX Packets      :24               TX Packets      :27
  RX Mcast Packets  :0              TX Mcast Packets  :0
  RX Bcast Packets  :3              TX Bcast Packets  :0
  RX Dropped Packets:0              TX Dropped Packets:0
  RX Rate Kbps    :0                TX Rate Kbps     :0
  Usage Rate Kbps   :0


VM uuid  : 564dbb49-2228-1390-27b8-3b7774b4dd3c
VM name  : NTNX-J110F4W-A-CVM
VNIC mac : 00:0C:29:B4:DD:3C

  Time of capture   :2018/03/12 14:41:10
  RX Bytes        :140              TX Bytes        :63
  RX Packets      :4576             TX Packets      :4615
  RX Mcast Packets  :0              TX Mcast Packets  :0
  RX Bcast Packets  :3              TX Bcast Packets  :0
  RX Dropped Packets:0              TX Dropped Packets:0
  RX Rate Kbps    :140              TX Rate Kbps     :63
  Usage Rate Kbps   :204
```

show vlag config-consistency

Displays Virtual Link Aggregation Group (VLAG) global or detailed consistency checking information.

Syntax

`show vlag config-consistency [detail]`

where:

Parameter	Function
`detail`	Displays detailed consistency checking information about vLAG global and ISL related items, including the digest value and its configuration.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays global VLAG consistency checking information:

```
Switch> show vlag config-consistency
  "N/A": Unavailable value
  "-"  : Digest value, detail value dump by detail show command
  item                 Prio  result local           remote

 ---------------------------------------------------------------------------
 -----
  sys mac learn          high  pass  enable          enable
  global tag native      high  pass  disable         disable
  ISL port mode          high  pass  trunk           trunk
  ISL access vlan        high  pass  1               1
  ISL native vlan        high  pass  10              10
  ISL allowed vlan       high  pass  -               -
  ISL tag native         high  pass  none            none
  ISL dot1q tunnel       high  pass  disable         disable
  ISL egress tagged vlans high  pass  -               -
  stp mode               high  pass  rapid-pvst      rapid-pvst
  stp path cost          high  pass  long            long
  mst region name        high  pass  -               -
  mst region version     high  pass  0               0
  mst inst mapping        high  pass  -               -
  mst max-age            low   pass  20              20
  mst max-hops           low   pass  20              20
  mst hello time         low   pass  2               2
  mst forward time       low   pass  15                       15
```

The following command displays detailed VLAG consistency checking
information:

```
Switch> show vlag config-consistency detail
 "N/A": Unavailable value
 "-"  : Digest value, detail value dump by detail show command
 item                   Prio  result local               remote
 --------------------------------------------------------------------------
 sys mac learn          high  pass   enable               enable
 global tag native      high  pass   disable              disable
 ISL port mode          high  pass   trunk                trunk
 ISL access vlan        high  pass   1                    1
 ISL native vlan        high  pass   10                   10
 ISL allowed vlan       high  pass   8c fb 21 0e 10 73 f7 8c fb 21 0e 10 73 f7
                                     8b 1a b0 58 82 d6 5c 8b 1a b0 58 82 d6 5c
                                     19 18                19 18
 ISL tag native         high  pass   none                 none
 ISL dot1q tunnel       high  pass   disable              disable
 ISL egress tagged vlans high pass   6e 6f 6e 65 00 00 00 6e 6f 6e 65 00 00 00
                                     00 00 00 00 00 00 00 00 00 00 00 00 00 00
                                     00 00                00 00
 stp mode               high  pass   rapid-pvst           rapid-pvst
 stp path cost          high  pass   long                 long
 mst region name        high  pass   b8 10 61 e7 10 8c aa b8 10 61 e7 10 8c aa
                                     de 12 61 64 77 ef a9 de 12 61 64 77 ef a9
                                     eb 3b                eb 3b
 mst region version     high  pass   0                    0
 mst inst mapping       high  pass   ac 36 17 7f 50 28 3c ac 36 17 7f 50 28 3c
                                     d4 b8 38 21 d8 ab 26 d4 b8 38 21 d8 ab 26
                                     de 62                de 62
 mst max-age            low   pass   20                   20
 mst max-hops           low   pass   20                   20
 mst hello time         low   pass   2                    2
 mst forward time       low   pass   15                   15

 local digest item value:
   ISL allowed vlan: 1-256
   ISL egress tagged vlans: 1-9,11-256
   mst region name:
   mst inst mapping:
     Inst Vlans mapped
     ---- ------------------------------------------------------------
     0    1-4094
```

show vlag configuration

Displays Virtual Link Aggregation Group (VLAG) global and Inter-Switch Link (ISL) related configuration.

Syntax

```
show vlag configuration
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG configuration information:

```
Switch> show vlag configuration
!
vlag tier-id 1
vlag priority 100
vlag isl port-channel 3
vlag hlthchk keepalive-interval 2
vlag hlthchk retry-interval 3
vlag hlthchk peer-ip 10.241.38.183 vrf management
vlag auto-recover 240
vlag startup-delay 100
vlag enable
!
```

show vlag ecp

Displays Virtual Link Aggregation Group (VLAG) Edge Control Protocol (ECP) information.

Syntax

show vlag ecp {channels|statistics|upper-layer-protocols}

where:

Parameter	Function
channels	Displays VLAG ECP channel information.
statistics	Displays VLAG ECP statistics.
upper-layer-proto cols	Displays VLAG ECP upper layer protocol information.

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG ECP channel information:

```
Switch> show vlag ecp channels

---- ECP CHANNELS ----
Ifindex    Ena    State      NextSeq    LastAck    FreeWindow
--------+----------------+----------+--------+------------
100003     1      0          00513      00512      999
```

show vlag information

Displays Virtual Link Aggregation Group (VLAG) global and Inter-Switch Link (ISL) related state information.

Syntax

```
show vlag information
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG information:

```
Switch> show vlag information
 Global State    : enabled
  VRRP active     : enabled
  vLAG system MAC : O8:17:f4:c3:de:fe
  ISL Information:
    PAG     Ifindex     State        Previous State
    -------+-----------+-----------+-------------------------------
    100     100100      Active       Inactive

  Mis-Match Information:
                 Local                     Peer
    ------------+------------------------+----------------------
    Match Result : Match                   Match
    Tier ID     : 511                     511
    System Type  : NE2572                  NE2572
    OS Version   : 10.6.x.x                10.6.x.x

  Role Information:
                 Local                     Peer
    ------------+------------------------+----------------------
    Admin Role   : Secondary               Primary
    Oper Role    : Secondary               Primary
    Priority     : 200                     100
    System MAC   : a4:8c:db:ba:76:O1       a4:8c:db:ba:79:O1

  Consistency Checking Information:
    State           : enabled
    Strict Mode     : disabled
    Final Result    : pass

 FDB refresh Information:
 FDB is doing refresh with below setting:
   FDB refresh is configured
   Bridge FDB aging timer is 1800 second(s)

 FDB synchronization Information:
 FDB is being synchronized.

 Auto Recovery Interval 240s (Finished)

 Startup Delay Interval 6Os (Finished)

 Health Check Information:
  Health check Peer IP Address: 10.241.38.232
  Health check Local IP Address: 10.241.38.233
  Health check retry interval: 30 seconds
  Health check number of keepalive attempts: 3
  Health check keepalive interval: 5 seconds
  Health check status: UP
  Peer Gateway State    : disabled
```

show vlag instance

Displays Virtual Link Aggregation Group (VLAG) instance configuration and state information.

Syntax

show vlag instance {<*VLAG instance*>**|all} {config-consistency [detail]|configuration|information}**

where:

Parameter	Function
VLAG instance	The number of the VLAG instance. The *VLAG instance* is from 1 to 64.
all	Displays configuration or state information for all VLAG instances.
config-consistency [detail]	Displays global or detailed VLAG consistency checking information for a specified instance.
configuration	Displays VLAG instance configuration.
information	Displays VLAG instance state information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.
10.2	The **config-consistency** and **detail** keywords were added.

Example

The following command displays information for all VLAG instances:

```
Switch> show vlag instance all information
  VLAG instance 1 : enabled
  Instance Information
    PAG        ifindex     State           Previous State    Cons Res
    ----------+-----------+--------------+----------------+--------
    1000       101000      Formed          Remote UP         pass

  VLAG instance 64 : enabled
  Instance Information
    PAG        ifindex     State           Previous State    Cons Res
    ----------+-----------+--------------+----------------+--------
    2000       102000      Down            Remote UP         pass
```

show vlag internal event-history

Displays Virtual Link Aggregation Group (VLAG) event logs.

Syntax

show vlag internal event-history {errors|msgs}

where:

Parameter	Function
errors	Displays VLAG error logs.
msgs	Displays VLAG messages.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG messages:

```
Switch> show vlag internal event-history msgs

Event: MESSAGES, length:59, at 36010 usecs after Fri Jan  8 04:58:42 2016
 vlag_sm_isl_init(1428):
 VLAG ISL init get system type:64

Event: MESSAGES, length:74, at 36320 usecs after Fri Jan  8 04:58:42 2016
 vlag_sm_isl_init(1435):
 VLAG ISL init get OS version: 10.7.2.0 [part2]

Event: MESSAGES, length:53, at 134843 usecs after Fri Jan  8 04:58:42
2016
 vlag_sm_main(1964):
 VLAG SM pthread is running now

Event: MESSAGES, length:46, at 135326 usecs after Fri Jan  8 04:58:42
2016
 vlag_fdb_main(1140):
 VFDB start event loop.

Event: MESSAGES, length:36, at 933887 usecs after Fri Jan  8 04:58:42
2016
 vlag_start(347):
 VLAG has started
```

show vlag internal global information

Displays Virtual Link Aggregation Group (VLAG) global internal information.

Syntax

```
show vlag internal global information
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG global internal information:

```
Switch> show vlag internal global information
```

show vlag internal instance

Displays Virtual Link Aggregation Group (VLAG) internal instance information.

Syntax

show vlag internal instance {*<VLAG instance>***|all} information**

where:

Parameter	Function
VLAG instance	The number of the VLAG instance. The *VLAG instance* is from 1 to 64.
all	Displays internal information for all VLAG instances.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays internal information for VLAG instance 1:

```
Switch> show vlag internal instance 1 information

  Instance Runtime Entry 1 Dump:
    isl_id           : 1
    inst_pch_id      : 0
    pch_ifindex      : 0
    state            : 0(Down)
    old_state        : 0(Down)
    is_err_dis_set   : 0
    is_egr_mask_set  : 0
    egr_mask_result  : 0
    is_local_pch_up  : 0
    reserve          : 0
    waitting_query   : 0
    query_id         : 0
    reply_query_id   : 0
  Instance PCH Runtime Information Dump:
                  Local                     Peer
    ------------+-------------------------+---------------------
    LACP Channel : No                       No
    Partner Pri  : 0                        0
    Partner Key  : 0                        0
    Partner MAC  : 00:00:00:00:00:00        00:00:00:00:00:00
```

show vlag internal isl information

Displays Virtual Link Aggregation Group (VLAG) internal Inter-Switch Link (ISL) information.

Syntax

```
show vlag internal isl information
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG internal ISL information:

```
Switch> show vlag internal isl information

  ISL Runtime Entry Dump:
    isl_pch_id         : 0
    pch_ifindex        : 0
    state              : 0(Down)
    old_state          : 0(Down)
    peer_state         : 0(Down)
    is_local_match     : 0(No)
    is_peer_match      : 0(No)
    mis_log_printed    : 0(No)
    err_dis_all_inst   : 0(No)
    reserved           : 0
    local_tier_id      : 0
    peer_tier_id       : 0
    local_sys_type     : 64(G8272)
    peer_sys_type      : 0(Unknown)
    local_version      : 1075721256
    peer_version       : 1075721204
    lacp_prio          : 0
    peer_lacp_prio     : 0
    ecp_ulp_id         : -1

  Role Runtime Entry Dump:
    admin_role         : 0(Unselected)
    oper_role          : 0(Unselected)
    peer_admin_role    : 0(Unselected)
    peer_oper_role     : 0(Unselected)
    state              : 0
    old_state          : 0
    local_priority     : 0
    peer_priority      : 0
    local_mac          : a8:97:dc:de:25:01
    peer_mac           : 00:00:00:00:00:00
```

show vlag internal syncdb

Displays Virtual Link Aggregation Group (VLAG) Forwarding Database (FDB) information.

Syntax

show vlag internal syncdb {count|local|remote} [address *<MAC address>* **[interface {ethernet** *<chassis number/port number>***| port-channel** *<LAG number>***} [vlan** *<VLAN number>***]]]**

where:

Parameter	Function
count	Displays the number VLAG FDB entries.
local	Displays VLAG local FDB information.
remote	Displays VLAG remote FDB information.
address *MAC address*	Displays VLAG FDB information for the specified MAC address. The *MAC address* can be written in any of the following formats: 　○ X.X.X 　○ XX-XX-XX-XX-XX-XX 　○ XX:XX:XX:XX:XX:XX 　○ XXXX.XXXX.XXXX
interface ethernet *chassis number/port number*	Displays VLAG FDB information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface port-channel *LAG number*	Displays VLAG FDB information for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays VLAG FDB information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.

Modes

● User EXEC mode
● Privileged EXEC mode
● Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG local FDB entries:

```
Switch> show vlag internal syncdb local
VLAG local db:
  H - s/w hit bit; for remote db.
  D - del pending bit; for local db.
  P - peer mac bit; for remote db.

   VLAN        MAC       Ifindex Hit Del Peer
--+------+--------------+-------+---+---+----
  (4093 - A897.DCF7.DD01)  100003
  (2000 - A897.DCF7.DD01)  100003
  (  10 - A897.DCF7.DD01)  100003
  (   9 - A897.DCF7.DD01)  100003
  (   8 - A897.DCF7.DD01)  100003
  (   7 - A897.DCF7.DD01)  100003
  (   6 - A897.DCF7.DD01)  100003
  (   5 - A897.DCF7.DD01)  100003
  (   4 - A897.DCF7.DD01)  100003
  (   3 - A897.DCF7.DD01)  100003
  (   2 - A897.DCF7.DD01)  100003
  (   1 - A897.DCF7.DD01)  100003
```

show vlag internal vlandb

Displays Virtual Link Aggregation Group (VLAG) internal Forwarding Database (FDB) Virtual LAN (VLAN) configuration.

Syntax

show vlag internal vlandb {interface port-channel *<LAG number>***}|vlan** *<VLAN number>***}**

where:

Parameter	Function
interface port-channel *LAG number*	Displays VLAG FDB VLAN configuration for the specified Link Aggregation Group (LAG). The *LAG number* is from 1 to 4096.
vlan *VLAN number*	Displays VLAG FDB configuration for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG FDB configuration for VLAN 1:

```
Switch> show vlag internal vlandb vlan 1

VLAN 1 contain:
  100012
```

show vlag statistics

Displays Virtual Link Aggregation Group (VLAG) statistics.

Syntax

```
show vlag statistics
```

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAG statistics:

```
Switch> show vlag statistics
 TLV statistics :
                 TX Succ    TX Fail     RX Succ    RX Drop
 --------------+----------+-----------+---------+---------------
 Hello        : 13945     0           13942     0
 Role Elect   : 13        1           12        0
 Mis-Match    : 10        7           13        0
 Global State : 1         0           1         0
 aggr Status  : 27        0           27        0
 Query        : 34        0           34        0
 Old Cons TLV : 0         0           0         0
 Consistency  : 17        0           20        0

 FDB sync statistics :
   Local add        :      713486
   Local add fail   :           0
   Local del        :      682231
   Local a not ena  :           0
   Local a not sync :      115649
   Local a base     :           0
   Local d not ena  :           0
   Local d not sync :      138216
   Local d base     :           0
   Remote add       :      314514
   Remote del       :      223148
   Sync add         :      291061
   Sync del         :      222124
   ECP TX alloc ok  :       12930
   ECP TX alloc fails :         0
   HAL add error    :           0
   HAL del error    :           0
   HAL bulk error   :           0
   socket |     sent  |  handled |   fails
   HAL cb :  1395873   1395873         0
   HAL add:   466399    466399         0
   HAL del:   248657    248657         0
   br evt :      686       686         0
   ECP RX :     13599     13599         0

 Message queue current element number :
   To VFDB: 0
   To HAL : 0

 FDB sync db statistics :
   Local db current : 257
   Local db highest : 15559
   Remote db current: 0
   Remote db highest: 15557
```

show vlan

Displays Virtual LAN (VLAN) information.

Syntax

show vlan [access-map|brief|classifier|id *<VLAN number>***|name**
*<VLAN name>***|**
summary]

where:

Parameter	Function
access-map	Displays VLAN access map information.
brief	Displays all VLAN status information in brief.
classifier	Displays all VLAN classification commands information.
id *VLAN number*	Displays information about the specified VLAN. The *VLAN number* is from 1 to 4094.
name *VLAN name*	Displays information about the specified VLAN by its configured name.
summary	Displays a short VLAN information summary.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.
10.6	Added the **classifier** option.

Example

The following command displays VLAN information:

```
Switch> show vlan

Flags:
u - untagged egress traffic for this VLAN
t - tagged egress traffic for this VLAN

d - auto-provisioned VLAN
h - static and auto-provisioned VLAN

VLAN    Name                            Status  IPMC FLOOD Ports

======= =============================== ======= ========== ===============
1       default                         ACTIVE  Disabled
                                                           Ethernet1/1(u)
                                                           Ethernet1/35(u)
                                                           Ethernet1/36(u)
                                                           Ethernet1/37(u)
                                                           Ethernet1/38(u)
                                                           Ethernet1/39(u)
                                                           Ethernet1/41(u)
                                                           Ethernet1/42(u)
                                                           Ethernet1/43(u)
                                                           Ethernet1/44(u)
                                                           Ethernet1/45(u)
                                                           Ethernet1/46(u)
                                                           Ethernet1/47(u)
                                                           Ethernet1/48(u)
                                                           Ethernet1/49(u)
                                                           Ethernet1/50(u)
                                                           Ethernet1/51(u)
                                                           Ethernet1/52(u)
                                                           Ethernet1/53(u)
                                                           Ethernet1/54(u)
                                                           po12(u)
2       VLAN0002                        ACTIVE  Disabled
                                                           Ethernet1/1(t)
                                                           Ethernet1/2(u)
3       VLAN0003                        ACTIVE  Disabled
                                                           Ethernet1/1(t)
                                                           Ethernet1/3(u)
4       VLAN0004                        ACTIVE  Disabled
                                                           Ethernet1/1(t)
                                                           Ethernet1/4(u)
5       VLAN0005                        ACTIVE  Disabled
                                                           Ethernet1/1(t)
                                                           Ethernet1/5(u)
6       VLAN0006                        ACTIVE  Disabled
                                                           Ethernet1/1(t)
                                                           Ethernet1/6(u)
7       VLAN0007                        ACTIVE  Disabled
                                                           Ethernet1/1(t)
                                                           Ethernet1/7(u)
...
```

show vlan access-list

Displays Virtual LAN (VLAN) access list information.

Syntax

show vlan access-list [<*access list name*>**]**

where:

Parameter	Function
access list name	The name of the VLAN access list.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAN access list information:

```
Switch> show vlan access-list
```

show vlan classifier subnet-vlan

Displays IP subnet VLAN information.

Syntax

show vlan classifer subnet-vlan [ip {<IP address> <mask> **|** <IP address>/<submask>**} | vlan** <VLAN ID>**]**

show vlan classifer subnet-vlan state [interface {ethernet <chassis number>/<port number> **| port-channel** <port-channel (1-4096>**}]**

where:

Parameter	Function
ip IP address/mask |<IP address>/<submask> | **vlan** VLAN ID	Displays information about the mapping rule base for a specific IP address or VLAN ID.
state [interface {ethernet <chassis number>/<port number> **| port-channel** <port-channel (1-4096>**}]**	Displays information about the IP subnet VLAN state of an interface.

Modes

All command modes

History

Release	Modification
10.6	The command was introduced.

Example

The following command displays information regarding IP subnet VLAN:

```
Switch> show vlan classifier subnet-vlan classifier subnet-vlan
  Maximum Subnet VLAN Entry Number: 256
  IPv4 Subnet VLAN Entry Count    : 1
  Source IP Subnet       VLAN    Priority
  ----------------------+-------+--------
  10.241.28.128/25       10      5
```

show vlan dot1q tag native

Displays the status of tagging on the native Virtual LANs (VLANs).

Syntax

show vlan dot1q tag native

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays the status of tagging on the native VLANs:

```
Switch> show vlan dot1q tag native
Tag native vlan global setting: enabled
Port              Tag Native VLAN Status
-----------------  ---------------------
Ethernet1/8        enabled
Ethernet1/4        enabled
po100              enabled
po1                disabled
Ethernet1/3        enabled
Ethernet1/7        enabled
Ethernet1/10       enabled
Ethernet1/48       enabled (egress-only)
Ethernet1/40       enabled
Ethernet1/52/2     enabled
Ethernet1/51/2     enabled
Ethernet1/51/1     enabled
Ethernet1/51/4     enabled
Ethernet1/51/3     enabled
Ethernet1/52/1     enabled
Ethernet1/52/4     enabled
Ethernet1/52/3     enabled
```

show vlan filter

Displays information about all Virtual LAN (VLAN) filters.

Syntax

show vlan filter [access-map *<access map name>***|vlan** *<VLAN number>***]**

where:

Parameter	Function
`access-map` *access map name*	Displays filter information about the specified VLAN access map.
`vlan` *VLAN number*	Displays filter information about the specified VLAN. The *VLAN number* is from 1 to 4094.

Modes

All command modes

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VLAN filter information:

```
Switch> show vlan filter
```

show vnetworks

Displays Virtual Network (vNetwork) information.

Syntax

show [vmware] vnetworks [uuid *<vNetwork UUID>***]**

where:

Parameter	Description
vmware	Display VMware vNetwork related information only.
vNetwork UUID	Show information for the specified vNetwork identified by its Universally Unique Identifier (UUID).

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.3	The command was introduced.
10.7	Added the **vmware** option.

Example

The following command displays vNetwork information for Nutanix:

```
Switch> show vnetworks

uuid: ce4afd70-f934-4fc6-842b-eecc4ee6a831
    name: vl1010
    vlan_id: 1010

uuid: cb36a1db-9913-4aa6-bc44-b44176a44349
    name: vl3
    vlan_id: 33

uuid: c24f3ffa-6343-4fb3-8902-77221efdaba0
    name: vl30
    vlan_id: 30
```

The following command displays vNetwork information for VMware:

```
Switch> show vmware vnetworks
Total number of virtual networks: 5

host_uuid: 0e056c6c-0284-e611-a495-0894ef25a88b

    name: Backplane Network
    vlan_id: 0
    vswitch_name: vSwitch0

    name: IMM_Network0
    vlan_id: 0
    vswitch_name: vSwitchUSB0

    name: USER_Vlan 10
    vlan_id: 10
    vswitch_name: vSwitch0

    name: User_VLAN505
    vlan_id: 505
    vswitch_name: vSwitch0

    name: User_Vlan0
    vlan_id: 0
    vswitch_name: vSwitch0
```

The following command displays vNetwork uuid information:

```
Switch> show vnetworks uuid bde82d23-72d5-4ca5-b8bc-a2efda381502

uuid: bde82d23-72d5-4ca5-b8bc-a2efda381502
    name: vl1075
    vlan_id: 1075
```

Tshow vrrp

Displays Virtual Router Redundancy Protocol (VRRP) information.

Syntax

`show vrrp [ipv6] [detail] [interface {` *`<interface name>`* **`|`**
`|ethernet` *`<chassis number/port number>`* **`|vlan`** *`<VLAN number>`* **`}]`**
`[backup|init|master]`

where:

Parameter	Function
`ipv6`	Displays VRRP information only for IPv6 sessions.
`detail`	Displays detailed VRRP information.
`interface` *interface name*	Displays VRRP information for the specified interface by name.
`interface ethernet` *chassis number/port number*	Displays VRRP information for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
`interface vlan` *VLAN number*	Displays VRRP information for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
`backup`	Displays information about VRRP groups in backup state.
`init`	Displays information about VRRP groups in init state.
`master`	Displays information about VRRP groups in master state.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VRRP information:

```
Switch> show vrrp
  Interface     VR  IpVer Pri Time    Pre  State   VR IP addr
  ---------------------------------------------------------------
  Ethernet1/51/4 1   IPV4  100 100  cs  Y   Master  15.1.1.10
  Vlan2         1   IPV4  102 100  cs  Y   Backup  200.0.2.10
  Vlan12        2   IPV4  100 100  cs  Y   Init    11.1.2.100
```

show vrrp ecp

Displays Virtual Router Redundancy Protocol (VRRP) Edge Control Protocol (ECP) information.

Syntax

`show vrrp ecp {channels|statistics|upper-layer-protocols}`

where:

Parameter	Function
channels	Displays VRRP ECP channel information.
statistics	Displays VRRP ECP statistics.
upper-layer-proto cols	Displays VRRP ECP upper layer protocol information.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays VRRP ECP channel information:

```
Switch> show vrrp ecp channels
---- ECP CHANNELS ----
Ifindex    Ena    State    NextSeq    LastAck    FreeWindow
----------+------+--------+----------+----------+------------
100100     1      0        65501      65500      999
```

show vrrp vlag

Displays vLAG Virtual Router Redundancy Protocol (VRRP) information.

Syntax

show vrrp vlag [interface {<*interface name*>**|ethernet** <*chassis number*>**/**<*port number*>**|vlan** <*VLAN number*>**}|vr** <*VRRP group*>**] [backup|init|master]**

where:

Parameter	Function
interface *interface name*	Displays vLAG VRRP statistics for the specified interface by name.
interface ethernet *chassis number/port number*	Displays vLAG VRRP statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface vlan *VLAN number*	Displays vLAG VRRP statistics for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
backup	Displays statistics about vLAG VRRP groups in backup state.
init	Displays statistics about vLAG VRRP groups in init state.
master	Displays statistics about vLAG VRRP groups in master state.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays vLAG VRRP information:

```
Switch> show vrrp vlag
Flags: F - Forwarding enabled on Backup for vLAG
   vLAG enabled, mode: vrrp active
   Interface     VR IpVer Pri Time    Pre  State   VR IP addr
-------------------------------------------------------------------
(F)Vlan100       1   IPV4  160 100  cs  Y   Backup  172.16.10.250
(F)Vlan200       150 IPV4  160 100  cs  Y   Backup  172.16.20.250
```

show vrrp vr

Displays Virtual Router Redundancy Protocol (VRRP) group information.

Syntax

show vrrp [ipv6] [detail] vr *<VRRP group>* **[backup|init|**
|master]

where:

Parameter	Function
ipv6	Displays VRRP information only for IPv6 sessions.
detail	Displays detailed VRRP information.
VRRP group	Displays information about the specified VRRP group. The *VRRP group* is from 1 to 255.
backup	Displays information about VRRP groups in backup state.
init	Displays information about VRRP groups in init state.
master	Displays information about VRRP groups in master state.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays information about VRRP group 1:

```
Switch> show vrrp vr 1

Interface     VR IpVer Pri Time   Pre  State   VR IP addr
------------------------------------------------------------------
 Ethernet1/51/4 1  IPV4  100 100  cs  Y   Master  15.1.1.10
 Vlan2         1   IPV4  102 100  cs  Y   Backup  200.0.2.10
```

show vrrp statistics

Displays Virtual Router Redundancy Protocol (VRRP) statistics.

Syntax

show vrrp [ipv6] statistics [interface {<*interface name*>**|**
|ethernet <*chassis number***/***port number*>**|vlan** <*VLAN number*>**}|vr** <*VRRP*
group>**] [backup|init|master]**

where:

Parameter	Function
ipv6	Displays VRRP statistics only for IPv6 sessions.
interface *interface name*	Displays VRRP statistics for the specified interface by name.
interface ethernet *chassis number/port number*	Displays VRRP statistics for the specified ethernet interface. The *chassis number* is 1 and the *port number* depends on the switch type.
interface vlan *VLAN number*	Displays VRRP statistics for the specified Virtual LAN (VLAN). The *VLAN number* is from 1 to 4094.
backup	Displays statistics about VRRP groups in backup state.
init	Displays statistics about VRRP groups in init state.
master	Displays statistics about VRRP groups in master state.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays VRRP statistics:

```
Switch> show vrrp statistics
Checksum Errors: O
 Version Errors: O
 VRid Errors: O
Address family IPv4
VRRP Id: 1 on interface: Ethernet1/51/4
 Master Transitions: 1
 Advertisements Rcvd: 71
 Pkts Rcvd with IP TTL Errors: O
 Pkts Rcvd with Zero Priority: O
 Pkts Sent with Zero Priority: O
 Pkts Rcvd with Invalid TYPE: O
 Pkts Rcvd with VR IP Address Errors: O
 Pkts Rcvd with Packet Length Errors: O
 Pkts Rcvd with IP Count Mismatch: O
 Discontuinity Time: (O) 0:00:00.00
 Refresh Rate: 1000 ms

Address family IPv4
VRRP Id: 1 on interface: Vlan2
 Master Transitions: O
 Advertisements Rcvd: 2138
 Pkts Rcvd with IP TTL Errors: O
 Pkts Rcvd with Zero Priority: O
 Pkts Sent with Zero Priority: O
 Pkts Rcvd with Invalid TYPE: O
 Pkts Rcvd with VR IP Address Errors: O
 Pkts Rcvd with Packet Length Errors: O
 Pkts Rcvd with IP Count Mismatch: O
 Discontuinity Time: (O) 0:00:00.00
 Refresh Rate: 1000 ms

Address family IPv4
VRRP Id: 2 on interface: Vlan12
 Master Transitions: O
 Advertisements Rcvd: O
 Pkts Rcvd with IP TTL Errors: O
 Pkts Rcvd with Zero Priority: O
 Pkts Sent with Zero Priority: O
 Pkts Rcvd with Invalid TYPE: O
 Pkts Rcvd with VR IP Address Errors: O
 Pkts Rcvd with Packet Length Errors: O
 Pkts Rcvd with IP Count Mismatch: O
 Discontuinity Time: (O) 0:00:00.00
 Refresh Rate: 1000 ms
```

show vrrp summary

Displays a short Virtual Router Redundancy Protocol (VRRP) information summary.

Syntax

show vrrp [ipv6] summary

where:

Parameter	Function
ipv6	Displays VRRP information only for IPv6 sessions.

Modes

- User EXEC mode
- Privileged EXEC mode
- Global Configuration mode

History

Release	Modification
10.1	The command was introduced.

Example

The following command displays a short VRRP information summary:

```
Switch> show vrrp summary
Total Number of Groups Configured: 3
       Init : 0        Backup : 1      Master : 2
Number of VRRP enabled interfaces : 3

FSM State History

Ethernet1/51/4 - Group 1 (IPV4)
--------------------------------------------------------------------
Time       Prev State            State            Event
--------------------------------------------------------------------
65         BACKUP                MASTER           preempted


Vlan2 - Group 1 (IPV4)
--------------------------------------------------------------------
Time       Prev State            State            Event
--------------------------------------------------------------------
298        INIT                  BACKUP           Not Master


Vlan12 - Group 2 (IPV4)
--------------------------------------------------------------------
Time       Prev State            State            Event
--------------------------------------------------------------------
78         BACKUP                MASTER           no response
```

show zerotouch

Displays a short Zero Touch Provisioning (ZTP) information summary.

Syntax

```
show zerotouch
```

Modes

- User EXEC mode
- Privileged EXEC mode

History

Release	Modification
10.2	The command was introduced.

Example

The following command displays a short ZTP information summary:

```
Switch> show zerotouch
TFTP server: 10.122.3.69
Image: G8xxx-10.2.0.1.img
Configuration: netboot_config_file_G8xxx
Script: netboot_G8xxx.p
```

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

Use this information to obtain additional information about Lenovo and Lenovo products, and determine what to do if you experience a problem with your Lenovo system or optional device.

Note: This section includes references to IBM web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the System x, Flex System, and NeXtScale System products.

Before you call, make sure that you have taken these steps to try to solve the problem yourself.

If you believe that you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare before you call.

- Check all cables to make sure that they are connected.

- Check the power switches to make sure that the system and any optional devices are turned on.

- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.

- If you have installed new hardware or software in your environment, check the IBM ServerProven website to make sure that the hardware and software is supported by your product.

- Go to the IBM Support portal to check for information to help you solve the problem.

- Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.

  o Hardware and Software Maintenance agreement contract numbers, if applicable

  o Machine type number (if applicable–Lenovo 4-digit machine identifier)

  o Model number

  o Serial number

  o Current system UEFI and firmware levels

  o Other pertinent information such as error messages and logs

- Start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The Lenovo product documentation also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

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Important Notes

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1,024 bytes, MB stands for 1,048,576 bytes and GB stands for 1,073,741,824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1,000,000 bytes and GB stands for 1,000,000,000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard-disk-drive bays with the largest currently supported drives that are available from Lenovo.

Maximum memory might require replacement of the standard memory with an optional memory module.

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write cycles that it can be subjected to, expressed as total bytes written (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. Lenovo is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

Lenovo makes no representations or warranties with respect to non-Lenovo products. Support (if any) for the non-Lenovo products is provided by the third party, not Lenovo.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Recycling Information

Lenovo encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. For information on recycling Lenovo products, go to:

http://www.lenovo.com/recycling

Particulate Contamination

Attention: Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the device that is described in this document.

Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the device to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If Lenovo determines that the levels of particulates or gases in your environment have caused damage to the device, Lenovo may condition provision of repair or replacement of devices or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility..

Contaminant	Limits
Particulate	- The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2[1]. - Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282. - The deliquescent relative humidity of the particulate contamination must be more than 60%[2]. - The room must be free of conductive contamination such as zinc whiskers.
Gaseous	- Copper: Class G1 as per ANSI/ISA 71.04-1985[3] - Silver: Corrosion rate of less than 300 Å in 30 days

[1] ASHRAE 52.2-2008 - *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

[2] The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.

[3] ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.

Telecommunication Regulatory Statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact a Lenovo representative or reseller for any questions.

Electronic Emission Notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used to meet FCC emission limits. Lenovo is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that might cause undesired operation.

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de Conformité à la Réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A Statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Union - Compliance to the Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC (until April 19, 2016) and EU Council Directive 2014/30/EU (from April 20, 2016) on the approximation of the laws of the Member States relating to electromagnetic compatibility. Lenovo cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits for Class A equipment according to European Standards harmonized in the Directives in compliance. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

 $C\,E$ Lenovo, Einsteinova 21, 851 01 Bratislava, Slovakia

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Germany Class A Statement

Deutschsprachiger EU Hinweis:

Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU (früher 2004/108/EC) zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der Klasse A der Norm gemäß Richtlinie.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der Lenovo empfohlene Kabel angeschlossen werden. Lenovo übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der Lenovo verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der Lenovo gesteckt/eingebaut werden.

Deutschland:

Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Betriebsmittein

Dieses Produkt entspricht dem „Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln" EMVG (früher „Gesetz über die elektromagnetische Verträglichkeit von Geräten"). Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU (früher 2004/108/EC) in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln, EMVG vom 20. Juli 2007 (früher Gesetz über die elektromagnetische Verträglichkeit von Geräten), bzw. der EMV EU Richtlinie 2014/30/EU (früher 2004/108/EC), für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraf 5 des EMVG ist die Lenovo (Deutschland) GmbH, Meitnerstr. 9, D-70563 Stuttgart.

Informationen in Hinsicht EMVG Paragraf 4 Abs. (1) 4:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Nach der EN 55022: „Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen."

Nach dem EMVG: „Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs. 4). Dieses Genehmigungsverfahrenist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Anmerkung: Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Handbüchern angegeben, zu installieren und zu betreiben.

Japan VCCI Class A Statement

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。　　　　VCCI-A

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) Statement

高調波ガイドライン適合品

Japan Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guidelines (products less than or equal to 20 A per phase)

高調波ガイドライン準用品

Japan Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guidelines with Modifications (products greater than 20 A per phase).

Korea Communications Commission (KCC) Statement

이 기기는 업무용(A급)으로 전자파적합기기로
서 판매자 또는 사용자는 이 점을 주의하시기
바라며, 가정외의 지역에서 사용하는 것을 목
적으로 합니다.

This is electromagnetic wave compatibility equipment for business (Type A). Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для
снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

中华人民共和国 "A类" 警告声明

声 明
此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，
可能需要用户对其干扰采取切实可行的措施。

Taiwan Class A compliance statement

警告使用者：
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。