

# rmon collection stats

Use the **rmon collection stats** interface configuration command to collect Ethernet group statistics, which include usage statistics about broadcast and multicast packets, and error statistics about cyclic redundancy check (CRC) alignment errors and collisions. Use the **no** form of this command to return to the default setting.

**rmon collection stats** *index* [*owner name*]

**no rmon collection stats** *index* [*owner name*]

Syntax Description		
<i>index</i>		Remote Network Monitoring (RMON) collection control index. The range is 1 to 65535.
<i>owner name</i>		(Optional) Owner of the RMON collection.

**Defaults** The RMON statistics collection is disabled.

**Command Modes** Interface configuration

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** The RMON statistics collection command is based on hardware counters.

**Examples** This example shows how to collect RMON statistics for the owner *root*:

```
Switch(config)# interface gigabitethernet0/1
Switch(config-if)# rmon collection stats 2 owner root
```

You can verify your setting by entering the **show rmon statistics** privileged EXEC command.

Related Commands	Command	Description
	<b>show rmon statistics</b>	Displays RMON statistics.
		For syntax information, select <b>Cisco IOS Configuration Fundamentals Command Reference, Release 12.2 &gt; System Management Commands &gt; RMON Commands</b> .

# sdm prefer

Use the **sdm prefer** global configuration command to configure the template used in Switch Database Management (SDM) resource allocation. You can use a template to allocate system resources to best support the features being used in your application. Use the **no** form of this command to return to the default template.

```
sdm prefer { default | qos }
```

```
no sdm prefer
```

## Syntax Description

<b>default</b>	Give balance to all functions.
<b>qos</b>	Provide maximum system usage for quality of service (QoS) access control entries (ACEs).

## Defaults

The default template provides a balance to all features.

## Command Modes

Global configuration

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

You must reload the switch for the configuration to take effect.

If you enter the **show sdm prefer** command before you enter the **reload** privileged EXEC command, the **show sdm prefer** command shows the template currently in use and the template that will become active after a reload.

Use the **no sdm prefer** command to set the switch to the default desktop template.

[Table 2-4](#) lists the approximate numbers of each resource supported in each template.

**Table 2-4 Approximate Number of Feature Resources Allowed by Each Template**

Resource	Default	QoS
Unicast MAC addresses	8 K	8 K
IPv4 IGMP groups	256	256
IPv4 MAC QoS ACEs	128	384
IPv4 MAC security ACEs	384	128

---

**Examples**

This example shows how to use the QoS template:

```
Switch(config)# sdm prefer qos  
Switch(config)# exit  
Switch# reload
```

You can verify your settings by entering the **show sdm prefer** privileged EXEC command.

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<a href="#">show sdm prefer</a>	Displays the current SDM template in use or displays the templates that can be used, with approximate resource allocation per feature.

---

# service password-recovery

Use the **service password-recovery** global configuration command to enable the password-recovery mechanism (the default). This mechanism allows an end user with physical access to the switch to hold down the **Mode** button and interrupt the bootup process while the switch is powering up and to assign a new password. Use the **no** form of this command to disable part of the password-recovery functionality. When the password-recovery mechanism is disabled, interrupting the bootup process is allowed only if the user agrees to set the system back to the default configuration.

**service password-recovery**

**no service password-recovery**

**Syntax Description** This command has no arguments or keywords.

**Defaults** The password-recovery mechanism is enabled.

**Command Modes** Global configuration

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** As a system administrator, you can use the **no service password-recovery** command to disable some of the functionality of the password recovery feature by allowing an end user to reset a password only by agreeing to return to the default configuration.

To use the password-recovery procedure, a user with physical access to the switch holds down the **Mode** button while the unit powers up and for a second or two after the LED above port 1X turns off. When the button is released, the system continues with initialization.

If the password-recovery mechanism is disabled, this message appears:

```
The password-recovery mechanism has been triggered, but
is currently disabled. Access to the boot loader prompt
through the password-recovery mechanism is disallowed at
this point. However, if you agree to let the system be
reset back to the default system configuration, access
to the boot loader prompt can still be allowed.
```

```
Would you like to reset the system back to the default configuration (y/n)?
```

If the user chooses not to reset the system to the default configuration, the normal bootup process continues, as if the **Mode** button had not been pressed. If you choose to reset the system to the default configuration, the configuration file in flash memory is deleted, and the VLAN database file, *flash:vlan.dat* (if present), is deleted.

**Note**

If you use the **no service password-recovery** command to control end user access to passwords, we recommend that you save a copy of the config file in a location away from the switch in case the end user uses the password recovery procedure and sets the system back to default values. Do not keep a backup copy of the config file on the switch.

If the switch is operating in VTP transparent mode, we recommend that you also save a copy of the vlan.dat file in a location away from the switch.

You can verify if password recovery is enabled or disabled by entering the **show version** privileged EXEC command.

**Examples**

This example shows how to disable password recovery on a switch so that a user can only reset a password by agreeing to return to the default configuration.

```
Switch(config)# no service-password recovery
Switch(config)# exit
```

**Related Commands**

Command	Description
<a href="#">show version</a>	Displays version information for the hardware and firmware.

# set

Use the **set** policy-map class configuration command to classify IP traffic by setting a Differentiated Services Code Point (DSCP) or an IP-precedence value in the packet. Use the **no** form of this command to remove traffic classification.

```
set { dscp new-dscp | [ip] precedence new-precedence }
```

```
no set { dscp new-dscp | [ip] precedence new-precedence }
```

## Syntax Description

<b>dscp</b> <i>new-dscp</i>	New DSCP value assigned to the classified traffic. The range is 0 to 63. You also can enter a mnemonic name for a commonly used value.
[ <b>ip</b> ] <b>precedence</b> <i>new-precedence</i>	New IP-precedence value assigned to the classified traffic. The range is 0 to 7. You also can enter a mnemonic name for a commonly used value.

## Defaults

No traffic classification is defined.

## Command Modes

Policy-map class configuration

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

If you have used the **set ip dscp** policy-map class configuration command, the switch changes this command to **set dscp** in the switch configuration. If you enter the **set ip dscp** policy-map class configuration command, this setting appears as **set dscp** in the switch configuration.

In Cisco IOS Release 12.2(25)SED or later, you can use the **set ip precedence** policy-map class configuration command or the **set precedence** policy-map class configuration command. This setting appears as **set ip precedence** in the switch configuration.

The **set** command is mutually exclusive with the **trust** policy-map class configuration command within the same policy map.

For the **set dscp** *new-dscp* or the **set ip precedence** *new-precedence* command, you can enter a mnemonic name for a commonly used value. For example, you can enter the **set dscp af11** command, which is the same as entering the **set dscp 10** command. You can enter the **set ip precedence critical** command, which is the same as entering the **set ip precedence 5** command. For a list of supported mnemonics, enter the **set dscp ?** or the **set ip precedence ?** command to see the command-line help strings.

To return to policy-map configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command.

---

**Examples**

This example shows how to assign DSCP 10 to all FTP traffic without any policers:

```
Switch(config)# policy-map policy_ftp
Switch(config-pmap)# class ftp_class
Switch(config-pmap-c)# set dscp 10
Switch(config-pmap)# exit
```

You can verify your settings by entering the **show policy-map** privileged EXEC command.

---

**Related Commands**

Command	Description
<a href="#">show port-security</a>	Displays QoS policy maps.
<a href="#">trust</a>	Defines a trust state for traffic classified through the <b>class</b> policy-map configuration command or the <b>class-map</b> global configuration command.

# setup

Use the **setup** privileged EXEC command to configure the switch with its initial configuration.

**setup**

---

**Syntax Description** This command has no arguments or keywords.

---

**Command Modes** Privileged EXEC

---

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

---



---

**Usage Guidelines** When you use the **setup** command, make sure that you have this information:

- IP address and network mask
- Password strategy for your environment
- Whether the switch will be used as the cluster command switch and the cluster name

When you enter the **setup** command, an interactive dialog, called the System Configuration Dialog, appears. It guides you through the configuration process and prompts you for information. The values shown in brackets next to each prompt are the default values last set by using either the **setup** command facility or the **configure** privileged EXEC command.

Help text is provided for each prompt. To access help text, press the question mark (?) key at a prompt.

To return to the privileged EXEC prompt without making changes and without running through the entire System Configuration Dialog, press **Ctrl-C**.

When you complete your changes, the setup program shows you the configuration command script that was created during the setup session. You can save the configuration in NVRAM or return to the setup program or the command-line prompt without saving it.

---

**Examples** This is an example of output from the **setup** command:

```
Switch# setup
--- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: yes
Configuring global parameters:
```

Enter host name [Switch]:*host-name*

The enable secret is a password used to protect access to privileged EXEC and configuration modes. This password, after entered, becomes encrypted in the configuration.

Enter enable secret: *enable-secret-password*

The enable password is used when you do not specify an enable secret password, with some older software versions, and some boot images.

Enter enable password: *enable-password*

The virtual terminal password is used to protect access to the router over a network interface.

Enter virtual terminal password: *terminal-password*

Configure SNMP Network Management? [no]: **yes**

Community string [public]:

Current interface summary

Any interface listed with OK? value "NO" does not have a valid configuration

Interface	IP-Address	OK?	Method	Status	Protocol
Vlan1	172.20.135.202	YES	NVRAM	up	up
GigabitEthernet0/1	unassigned	YES	unset	up	up
GigabitEthernet0/2	unassigned	YES	unset	up	down

<output truncated>

Port-channel1	unassigned	YES	unset	up	down
---------------	------------	-----	-------	----	------

Enter interface name used to connect to the management network from the above interface summary: **vlan1**

Configuring interface vlan1:

Configure IP on this interface? [yes]: **yes**

IP address for this interface: *ip\_address*

Subnet mask for this interface [255.0.0.0]: *subnet\_mask*

Would you like to enable as a cluster command switch? [yes/no]: **yes**

Enter cluster name: *cluster-name*

The following configuration command script was created:

```
hostname host-name
enable secret 5 $1$LiBw$0Xc1wyT.PXPkuhFwqyhVi0
enable password enable-password
line vty 0 15
password terminal-password
snmp-server community public
!
no ip routing
!
interface GigabitEthernet0/1
no ip address
!
interface GigabitEthernet0/2
no ip address
!
```

```

cluster enable cluster-name
!
end
Use this configuration? [yes/no]: yes
!
[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.

Enter your selection [2]:

```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show running-config</b>	Displays the running configuration on the switch. For syntax information, select <b>Cisco IOS Configuration Fundamentals Command Reference, Release 12.2 &gt; File Management Commands &gt; Configuration File Management Commands</b> .
<a href="#">show version</a>	Displays version information for the hardware and firmware.

# setup express

Use the **setup express** global configuration command to enable Express Setup mode. Use the **no** form of this command to disable Express Setup mode.

**setup express**

**no setup express**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Express Setup is enabled.

**Command Modes** Global configuration

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** When Express Setup is enabled on a new (unconfigured) switch, pressing the Mode button for 2 seconds activates Express Setup. You can access the switch through an Ethernet port by using the IP address 10.0.0.1 and then can configure the switch with the web-based Express Setup program or the command-line interface (CLI)-based setup program.

When you press the Mode button for 2 seconds on a configured switch, the LEDs above the Mode button start blinking. If you press the Mode button for a total of 10 seconds, the switch configuration is deleted, and the switch reboots. The switch can then be configured like a new switch, either through the web-based Express Setup program or the CLI-based setup program.



**Note** As soon as you make any change to the switch configuration (including entering *no* at the beginning of the CLI-based setup program), configuration by Express Setup is no longer available. You can only run Express Setup again by pressing the Mode button for 10 seconds. This deletes the switch configuration and reboots the switch.

If Express Setup is active on the switch, entering the **write memory** or **copy running-configuration startup-configuration** privileged EXEC commands deactivates Express Setup. The IP address 10.0.0.1 is no longer valid on the switch, and your connection using this IP address ends.

The primary purpose of the **no setup express** command is to prevent someone from deleting the switch configuration by pressing the Mode button for 10 seconds.

**Examples**

This example shows how to enable Express Setup mode:

```
Switch(config)# setup express
```

You can verify that Express Setup mode is enabled by pressing the Mode button:

- On an unconfigured switch, the LEDs above the Mode button turn solid green after 3 seconds.
- On a configured switch, the mode LEDs begin blinking after 2 seconds and turn solid green after 10 seconds.

**Caution**

If you *hold* the Mode button down for a total of 10 seconds, the configuration is deleted, and the switch reboots.

This example shows how to disable Express Setup mode:

```
Switch(config)# no setup express
```

You can verify that Express Setup mode is disabled by pressing the Mode button. The mode LEDs do not turn solid green *or* begin blinking green if Express Setup mode is not enabled on the switch.

**Related Commands**

Command	Description
<a href="#">show setup express</a>	Displays if Express Setup mode is active.

# show archive status

Use the **show archive status** privileged EXEC command to display the status of a new image being downloaded to a switch with the HTTP or the TFTP protocol.

```
show archive status [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** If you use the **archive download-sw** privileged EXEC command to download an image to a TFTP server, the output of the **archive download-sw** command shows the status of the download.

If you do not have a TFTP server, you can use Network Assistant or the embedded device manager to download the image by using HTTP. The **show archive status** command shows the progress of the download.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** These are examples of output from the **show archive status** command:

```
Switch# show archive status
IDLE: No upgrade in progress
```

```
Switch# show archive status
LOADING: Upgrade in progress
```

```
Switch# show archive status
EXTRACT: Extracting the image
```

```
Switch# show archive status
VERIFY: Verifying software
```

```
Switch# show archive status
RELOAD: Upgrade completed. Reload pending
```

Related Commands	Command	Description
	<a href="#">archive download-sw</a>	Downloads a new image from a TFTP server to the switch.

# show boot

Use the **show boot** privileged EXEC command to display the settings of the boot environment variables.

```
show boot [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show boot** command. [Table 2-5](#) describes each field in the display.

```
Switch# show boot
BOOT path-list: flash:c2960-lanbase-mz.122-25.FX.bin
Config file:      flash:/config.text
Private Config file: flash:/private-config
Enable Break:    no
Manual Boot:     yes
HELPER path-list:
NVRAM/Config file
buffer size:    32768
```

**Table 2-5** show boot Field Descriptions

Field	Description
BOOT path-list	Displays a semicolon separated list of executable files to try to load and execute when automatically booting up.  If the BOOT environment variable is not set, the system attempts to load and execute the first executable image it can find by using a recursive, depth-first search through the flash file system. In a depth-first search of a directory, each encountered subdirectory is completely searched before continuing the search in the original directory.  If the BOOT variable is set but the specified images cannot be loaded, the system attempts to boot up with the first bootable file that it can find in the flash file system.
Config file	Displays the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.

**Table 2-5** *show boot Field Descriptions*

Field	Description
Private Config file	Displays the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.
Enable Break	Displays whether a break during booting up is enabled or disabled. If it is set to yes, on, or 1, you can interrupt the automatic bootup process by pressing the Break key on the console after the flash file system is initialized.
Manual Boot	Displays whether the switch automatically or manually boots up. If it is set to no or 0, the bootloader attempts to automatically boot up the system. If it is set to anything else, you must manually boot up the switch from the bootloader mode.
Helper path-list	Displays a semicolon separated list of loadable files to dynamically load during the bootloader initialization. Helper files extend or patch the functionality of the bootloader.
NVRAM/Config file buffer size	Displays the buffer size that Cisco IOS uses to hold a copy of the configuration file in memory. The configuration file cannot be larger than the buffer size allocation.

Related Commands	Command	Description
	<b>boot config-file</b>	Specifies the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.
	<b>boot enable-break</b>	Enables interrupting the automatic boot process.
	<b>boot manual</b>	Enables manually booting up the switch during the next bootup cycle.
	<b>boot private-config-file</b>	Specifies the filename that Cisco IOS uses to read and write a nonvolatile copy of the private configuration.
	<b>boot system</b>	Specifies the Cisco IOS image to load during the next bootup cycle.

# show cable-diagnostics tdr

Use the **show cable-diagnostics tdr** privileged EXEC command to display the Time Domain Reflector (TDR) results.

```
show cable-diagnostics tdr interface interface-id [ | { begin | exclude | include } expression ]
```

## Syntax Description

<i>interface-id</i>	Specify the interface on which TDR was run.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

TDR is supported only on 10/100 and 10/100/1000 copper Ethernet ports. It is not supported on SFP module ports. For more information about TDR, see the software configuration guide for this release.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show cable-diagnostics tdr interface *interface-id*** command:

```
Switch# show cable-diagnostics tdr interface gigabitethernet0/2
TDR test last run on: March 01 20:15:40
Interface Speed Local pair Pair length          Remote pair Pair status
-----
Gi0/2     auto   Pair A      0    +/- 2 meters N/A      Open
          Pair B      0    +/- 2 meters N/A      Open
          Pair C      0    +/- 2 meters N/A      Open
          Pair D      0    +/- 2 meters N/A      Open
```

[Table 2-6](#) lists the descriptions of the fields in the **show cable-diagnostics tdr** command output.

**Table 2-6** Fields Descriptions for the show cable-diagnostics tdr Command Output

Field	Description
Interface	Interface on which TDR was run.
Speed	Speed of connection.
Local pair	Name of the pair of wires that TDR is testing on the local interface.

**Table 2-6** Fields Descriptions for the show cable-diagnostics tdr Command Output (continued)

Field	Description
Pair length	Location on the cable where the problem is, with respect to your switch. TDR can only find the location in one of these cases: <ul style="list-style-type: none"> <li>• The cable is properly connected, the link is up, and the interface speed is 1000 Mb/s.</li> <li>• The cable is open.</li> <li>• The cable has a short.</li> </ul>
Remote pair	Name of the pair of wires to which the local pair is connected. TDR can learn about the remote pair only when the cable is properly connected and the link is up.
Pair status	The status of the pair of wires on which TDR is running: <ul style="list-style-type: none"> <li>• Normal—The pair of wires is properly connected.</li> <li>• Not completed—The test is running and is not completed.</li> <li>• Not supported—The interface does not support TDR.</li> <li>• Open—The pair of wires is open.</li> <li>• Shorted—The pair of wires is shorted.</li> </ul>

This is an example of output from the **show interfaces** *interface-id* command when TDR is running:

```
Switch# show interfaces gigabitethernet0/2
gigabitethernet0/2 is up, line protocol is up (connected: TDR in Progress)
```

This is an example of output from the **show cable-diagnostics tdr interface** *interface-id* command when TDR is not running:

```
Switch# show cable-diagnostics tdr interface gigabitethernet0/2
% TDR test was never issued on Gi0/2
```

If an interface does not support TDR, this message appears:

```
% TDR test is not supported on switch 1
```

**Related Commands**

Command	Description
<a href="#">test cable-diagnostics tdr</a>	Enables and runs TDR on an interface.

# show cluster

Use the **show cluster** user EXEC command to display the cluster status and a summary of the cluster to which the switch belongs. This command can be entered on the cluster command switch and cluster member switches.

```
show cluster [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** If you enter this command on a switch that is not a cluster member, the error message `Not a management cluster member` appears.

On a cluster member switch, this command displays the identity of the cluster command switch, the switch member number, and the state of its connectivity with the cluster command switch.

On a cluster command switch, this command displays the cluster name and the total number of members. It also shows the cluster status and time since the status changed. If redundancy is enabled, it displays the primary and secondary command-switch information.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output when the **show cluster** command is entered on the active cluster command switch:

```
Switch> show cluster
Command switch for cluster "Ajang"
Total number of members:      7
Status:                       1 members are unreachable
Time since last status change: 0 days, 0 hours, 2 minutes
Redundancy:                   Enabled
    Standby command switch: Member 1
    Standby Group:            Ajang_standby
    Standby Group Number:    110
Heartbeat interval:           8
Heartbeat hold-time:          80
Extended discovery hop count: 3
```

This is an example of output when the **show cluster** command is entered on a cluster member switch:

```
Switch1> show cluster
Member switch for cluster "hapuna"
  Member number:                3
  Management IP address:        192.192.192.192
  Command switch mac address:   0000.0c07.ac14
  Heartbeat interval:          8
  Heartbeat hold-time:         80
```

This is an example of output when the **show cluster** command is entered on a cluster member switch that is configured as the standby cluster command switch:

```
Switch> show cluster
Member switch for cluster "hapuna"
  Member number:                3 (Standby command switch)
  Management IP address:        192.192.192.192
  Command switch mac address:   0000.0c07.ac14
  Heartbeat interval:          8
  Heartbeat hold-time:         80
```

This is an example of output when the **show cluster** command is entered on the cluster command switch that has lost connectivity with member 1:

```
Switch> show cluster
Command switch for cluster "Ajang"
  Total number of members:      7
  Status:                       1 members are unreachable
  Time since last status change: 0 days, 0 hours, 5 minutes
  Redundancy:                   Disabled
  Heartbeat interval:           8
  Heartbeat hold-time:          80
  Extended discovery hop count: 3
```

This is an example of output when the **show cluster** command is entered on a cluster member switch that has lost connectivity with the cluster command switch:

```
Switch> show cluster
Member switch for cluster "hapuna"
  Member number:                <UNKNOWN>
  Management IP address:        192.192.192.192
  Command switch mac address:   0000.0c07.ac14
  Heartbeat interval:          8
  Heartbeat hold-time:         80
```

### Related Commands

Command	Description
<a href="#">cluster enable</a>	Enables a command-capable switch as the cluster command switch, assigns a cluster name, and optionally assigns a member number to it.
<a href="#">show cluster candidates</a>	Displays a list of candidate switches.
<a href="#">show cluster members</a>	Displays information about the cluster members.

# show cluster candidates

Use the **show cluster candidates** privileged EXEC command to display a list of candidate switches.

```
show cluster candidates [detail | mac-address H.H.H.] [ | {begin | exclude | include} expression]
```

Syntax Description	detail	(Optional) Display detailed information for all candidates.
	<b>mac-address</b> <i>H.H.H.</i>	(Optional) MAC address of the cluster candidate.
	<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
	<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
	<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
	<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** This command is available only on the cluster command switch.

If the switch is not a cluster command switch, the command displays an empty line at the prompt.

The SN in the display means *switch member number*. If E appears in the SN column, it means that the switch is discovered through extended discovery. If E does not appear in the SN column, it means that the *switch member number* is the upstream neighbor of the candidate switch. The hop count is the number of devices the candidate is from the cluster command switch.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show cluster candidates** command:

```
Switch> show cluster candidates
                                     |---Upstream---|
MAC Address   Name           Device Type      PortIf  FEC Hops SN PortIf  FEC
00d0.7961.c4c0 StLouis-2      WS-C2960-12T    Gi0/1   2   1   Fa0/11
00d0.bbf5.e900 ldf-dist-128  WS-C3524-XL     Fa0/7   1   0   Fa0/24
00e0.1e7e.be80 1900_Switch    1900            3       0   1   0   Fa0/11
00e0.1e9f.7a00 Surfers-24     WS-C2924-XL     Fa0/5   1   0   Fa0/3
00e0.1e9f.8c00 Surfers-12-2   WS-C2912-XL     Fa0/4   1   0   Fa0/7
00e0.1e9f.8c40 Surfers-12-1   WS-C2912-XL     Fa0/1   1   0   Fa0/9
```

This is an example of output from the **show cluster candidates** command that uses the MAC address of a cluster member switch directly connected to the cluster command switch:

```
Switch> show cluster candidates mac-address 00d0.7961.c4c0
Device 'Tahiti-12' with mac address number 00d0.7961.c4c0
  Device type:          cisco WS-C2960-12T
  Upstream MAC address: 00d0.796d.2f00 (Cluster Member 0)
  Local port:          Gi0/1   FEC number:
  Upstream port:       GI0/11  FEC Number:
```

Hops from cluster edge: 1  
Hops from command device: 1

This is an example of output from the **show cluster candidates** command that uses the MAC address of a cluster member switch three hops from the cluster edge:

```
Switch> show cluster candidates mac-address 0010.7bb6.1cc0
Device 'Ventura' with mac address number 0010.7bb6.1cc0
  Device type:          cisco WS-C2912MF-XL
  Upstream MAC address: 0010.7bb6.1cd4
  Local port:          Fa2/1   FEC number:
  Upstream port:       Fa0/24  FEC Number:
  Hops from cluster edge: 3
  Hops from command device: -
```

This is an example of output from the **show cluster candidates detail** command:

```
Switch> show cluster candidates detail
Device 'Tahiti-12' with mac address number 00d0.7961.c4c0
  Device type:          cisco WS-C3512-XL
  Upstream MAC address: 00d0.796d.2f00 (Cluster Member 1)
  Local port:          Fa0/3   FEC number:
  Upstream port:       Fa0/13  FEC Number:
  Hops from cluster edge: 1
  Hops from command device: 2
Device '1900_Switch' with mac address number 00e0.1e7e.be80
  Device type:          cisco 1900
  Upstream MAC address: 00d0.796d.2f00 (Cluster Member 2)
  Local port:          3       FEC number: 0
  Upstream port:       Fa0/11  FEC Number:
  Hops from cluster edge: 1
  Hops from command device: 2
Device 'Surfers-24' with mac address number 00e0.1e9f.7a00
  Device type:          cisco WS-C2924-XL
  Upstream MAC address: 00d0.796d.2f00 (Cluster Member 3)
  Local port:          Fa0/5   FEC number:
  Upstream port:       Fa0/3   FEC Number:
  Hops from cluster edge: 1
  Hops from command device: 2
```

#### Related Commands

Command	Description
<a href="#">show cluster</a>	Displays the cluster status and a summary of the cluster to which the switch belongs.
<a href="#">show cluster members</a>	Displays information about the cluster members.

# show cluster members

Use the **show cluster members** privileged EXEC command to display information about the cluster members.

```
show cluster members [n | detail] [ | { begin | exclude | include } expression]
```

Syntax Description	
<i>n</i>	(Optional) Number that identifies a cluster member. The range is 0 to 15.
<b>detail</b>	(Optional) Display detailed information for all cluster members.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** This command is available only on the cluster command switch.  
 If the cluster has no members, this command displays an empty line at the prompt.  
 Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show cluster members** command. The SN in the display means *switch number*.

```
Switch# show cluster members
SN MAC Address      Name           PortIf FEC Hops  |---Upstream---|
0  0002.4b29.2e00 StLouis1      0          0          SN PortIf  FEC  State
1  0030.946c.d740 tal-switch-1 Fa0/13      1          0  Gi0/1     Up   (Cmdr)
2  0002.b922.7180 nms-2820      10         0  2  1  Fa0/18     Up
3  0002.4b29.4400 SanJuan2      Gi0/1      2          1  1  Fa0/11     Up
4  0002.4b28.c480 GenieTest     Gi0/2      2          1  1  Fa0/9      Up
```

This is an example of output from the **show cluster members** for cluster member 3:

```
Switch# show cluster members 3
Device 'SanJuan2' with member number 3
Device type:          cisco WS-C2960
MAC address:          0002.4b29.4400
Upstream MAC address: 0030.946c.d740 (Cluster member 1)
Local port:           Gi0/1   FEC number:
Upstream port:       GI0/11  FEC Number:
Hops from command device: 2
```

This is an example of output from the **show cluster members detail** command:

```
Switch# show cluster members detail
Device 'StLouis1' with member number 0 (Command Switch)
  Device type:          cisco WS-C2960
  MAC address:         0002.4b29.2e00
  Upstream MAC address:
  Local port:          FEC number:
  Upstream port:       FEC Number:
  Hops from command device: 0
Device 'tal-switch-14' with member number 1
  Device type:          cisco WS-C3548-XL
  MAC address:         0030.946c.d740
  Upstream MAC address: 0002.4b29.2e00 (Cluster member 0)
  Local port:          Fa0/13  FEC number:
  Upstream port:       Gi0/1   FEC Number:
  Hops from command device: 1
Device 'nms-2820' with member number 2
  Device type:          cisco 2820
  MAC address:         0002.b922.7180
  Upstream MAC address: 0030.946c.d740 (Cluster member 1)
  Local port:          10      FEC number: 0
  Upstream port:       Fa0/18  FEC Number:
  Hops from command device: 2
Device 'SanJuan2' with member number 3
  Device type:          cisco WS-C2960
  MAC address:         0002.4b29.4400
  Upstream MAC address: 0030.946c.d740 (Cluster member 1)
  Local port:          Gi0/1   FEC number:
  Upstream port:       Fa0/11  FEC Number:
  Hops from command device: 2
Device 'GenieTest' with member number 4
  Device type:          cisco SeaHorse
  MAC address:         0002.4b28.c480
  Upstream MAC address: 0030.946c.d740 (Cluster member 1)
  Local port:          Gi0/2   FEC number:
  Upstream port:       Fa0/9   FEC Number:
  Hops from command device: 2
Device 'Palpatine' with member number 5
  Device type:          cisco WS-C2924M-XL
  MAC address:         00b0.6404.f8c0
  Upstream MAC address: 0002.4b29.2e00 (Cluster member 0)
  Local port:          Gi2/1   FEC number:
  Upstream port:       Gi0/7   FEC Number:
  Hops from command device: 1
```

### Related Commands

Command	Description
<a href="#">show cluster</a>	Displays the cluster status and a summary of the cluster to which the switch belongs.
<a href="#">show cluster candidates</a>	Displays a list of candidate switches.

# show controllers cpu-interface

Use the **show controllers cpu-interface** privileged EXEC command to display the state of the CPU network interface ASIC and the send and receive statistics for packets reaching the CPU.

**show controllers cpu-interface** [ | { **begin** | **exclude** | **include** } *expression* ]

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** This display provides information that might be useful for Cisco technical support representatives troubleshooting the switch.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is a partial output example from the **show controllers cpu-interface** command:

```
Switch# show controllers cpu-interface
cpu-queue-frames  retrieved  dropped  invalid  hol-block
-----
rpc               4523063  0        0        0
stp               1545035  0        0        0
ipc               1903047  0        0        0
routing protocol  96145    0        0        0
L2 protocol       79596    0        0        0
remote console    0         0        0        0
sw forwarding     5756     0        0        0
host              225646   0        0        0
broadcast         46472    0        0        0
cbt-to-spt        0         0        0        0
igmp snooping     68411    0        0        0
icmp              0         0        0        0
logging           0         0        0        0
rpf-fail          0         0        0        0
queue14           0         0        0        0
cpu heartbeat     1710501  0        0        0
```

```
Supervisor ASIC receive-queue parameters
```

```
-----
queue 0 maxrecevsize 5EE pakhead 1419A20 paktail 13EAED4
queue 1 maxrecevsize 5EE pakhead 15828E0 paktail 157FBFC
queue 2 maxrecevsize 5EE pakhead 1470D40 paktail 1470FE4
queue 3 maxrecevsize 5EE pakhead 19CDDD0 paktail 19D02C8
```

```
<output truncated>
```

```
Supervisor ASIC Mic Registers
```

```
-----
MicDirectPollInfo          80000800
MicIndicationsReceived    00000000
MicInterruptsReceived     00000000
MicPcsInfo                 0001001F
MicPlbMasterConfiguration 00000000
MicRxFifosAvailable       00000000
MicRxFifosReady           0000BFFF
MicTimeOutPeriod:        FrameTOPeriod: 00000EA6 DirectTOPeriod: 00004000
```

```
<output truncated>
```

```
MicTransmitFifoInfo:
```

```
Fifo0:  StartPtrs:      038C2800      ReadPtr:      038C2C38
        WritePtrs:      038C2C38      Fifo_Flag:    8A800800
        Weights:        001E001E
Fifo1:  StartPtr:      03A9BC00      ReadPtr:      03A9BC60
        WritePtrs:      03A9BC60      Fifo_Flag:    89800400
        writeHeaderPtr: 03A9BC60
Fifo2:  StartPtr:      038C8800      ReadPtr:      038C88E0
        WritePtrs:      038C88E0      Fifo_Flag:    88800200
        writeHeaderPtr: 038C88E0
Fifo3:  StartPtr:      03C30400      ReadPtr:      03C30638
        WritePtrs:      03C30638      Fifo_Flag:    89800400
        writeHeaderPtr: 03C30638
Fifo4:  StartPtr:      03AD5000      ReadPtr:      03AD50A0
        WritePtrs:      03AD50A0      Fifo_Flag:    89800400
        writeHeaderPtr: 03AD50A0
Fifo5:  StartPtr:      03A7A600      ReadPtr:      03A7A600
        WritePtrs:      03A7A600      Fifo_Flag:    88800200
        writeHeaderPtr: 03A7A600
Fifo6:  StartPtr:      03BF8400      ReadPtr:      03BF87F0
        WritePtrs:      03BF87F0      Fifo_Flag:    89800400
```

```
<output truncated>
```

## Related Commands

Command	Description
<a href="#">show controllers ethernet-controller</a>	Displays per-interface send and receive statistics read from the hardware or the interface internal registers.
<a href="#">show interfaces</a>	Displays the administrative and operational status of all interfaces or a specified interface.

# show controllers ethernet-controller

Use the **show controllers ethernet-controller** privileged EXEC command without keywords to display per-interface send and receive statistics read from the hardware. Use with the **phy** keyword to display the interface internal registers or the **port-asic** keyword to display information about the port ASIC.

```
show controllers ethernet-controller [interface-id] [phy [detail]] [port-asic {configuration |
statistics}] [fastethernet 0][ | {begin | exclude | include} expression]
```

## Syntax Description

<i>interface-id</i>	The physical interface (including type, module, and port number).
<b>phy</b>	(Optional) Display the status of the internal registers on the switch physical layer device (PHY) for the device or the interface. This display includes the operational state of the automatic medium-dependent interface crossover (auto-MDIX) feature on an interface.
<b>detail</b>	(Optional) Display details about the PHY internal registers.
<b>port-asic</b>	(Optional) Display information about the port ASIC internal registers.
<b>configuration</b>	Display port ASIC internal register configuration.
<b>statistics</b>	Display port ASIC statistics, including the Rx/Sup Queue and miscellaneous statistics.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

Privileged EXEC (only supported with the *interface-id* keywords in user EXEC mode)

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

This display without keywords provides traffic statistics, basically the RMON statistics for all interfaces or for the specified interface.

When you enter the **phy** or **port-asic** keywords, the displayed information is useful primarily for Cisco technical support representatives troubleshooting the switch.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples**

This is an example of output from the **show controllers ethernet-controller** command for an interface. [Table 2-7](#) describes the *Transmit* fields, and [Table 2-8](#) describes the *Receive* fields.

```
Switch# show controllers ethernet-controller gigabitEthernet0/1
Transmit GigabitEthernet0/1          Receive
 0 Bytes                               0 Bytes
 0 Unicast frames                       0 Unicast frames
 0 Multicast frames                     0 Multicast frames
 0 Broadcast frames                     0 Broadcast frames
 0 Too old frames                        0 Unicast bytes
 0 Deferred frames                       0 Multicast bytes
 0 MTU exceeded frames                   0 Broadcast bytes
 0 1 collision frames                    0 Alignment errors
 0 2 collision frames                    0 FCS errors
 0 3 collision frames                     0 Oversize frames
 0 4 collision frames                     0 Undersize frames
 0 5 collision frames                     0 Collision fragments
 0 6 collision frames
 0 7 collision frames                    0 Minimum size frames
 0 8 collision frames                    0 65 to 127 byte frames
 0 9 collision frames                    0 128 to 255 byte frames
 0 10 collision frames                   0 256 to 511 byte frames
 0 11 collision frames                   0 512 to 1023 byte frames
 0 12 collision frames                   0 1024 to 1518 byte frames
 0 13 collision frames                   0 Overrun frames
 0 14 collision frames                   0 Pause frames
 0 15 collision frames                   0 Symbol error frames
 0 Excessive collisions
 0 Late collisions                       0 Invalid frames, too large
 0 VLAN discard frames                   0 Valid frames, too large
 0 Excess defer frames                   0 Invalid frames, too small
 0 64 byte frames                        0 Valid frames, too small
 0 127 byte frames
 0 255 byte frames                       0 Too old frames
 0 511 byte frames                       0 Valid oversize frames
 0 1023 byte frames                      0 System FCS error frames
 0 1518 byte frames                      0 RxPortFifoFull drop frame
 0 Too large frames
 0 Good (1 coll) frames
```

**Table 2-7** *Transmit Field Descriptions*

Field	Description
Bytes	The total number of bytes sent on an interface.
Unicast Frames	The total number of frames sent to unicast addresses.
Multicast frames	The total number of frames sent to multicast addresses.
Broadcast frames	The total number of frames sent to broadcast addresses.
Too old frames	The number of frames dropped on the egress port because the packet aged out.
Deferred frames	The number of frames that are not sent after the time exceeds 2*maximum-packet time.
MTU exceeded frames	The number of frames that are larger than the maximum allowed frame size.
1 collision frames	The number of frames that are successfully sent on an interface after one collision occurs.
2 collision frames	The number of frames that are successfully sent on an interface after two collisions occur.
3 collision frames	The number of frames that are successfully sent on an interface after three collisions occur.
4 collision frames	The number of frames that are successfully sent on an interface after four collisions occur.

```
show controllers ethernet-controller
```

**Table 2-7** *Transmit Field Descriptions (continued)*

Field	Description
5 collision frames	The number of frames that are successfully sent on an interface after five collisions occur.
6 collision frames	The number of frames that are successfully sent on an interface after six collisions occur.
7 collision frames	The number of frames that are successfully sent on an interface after seven collisions occur.
8 collision frames	The number of frames that are successfully sent on an interface after eight collisions occur.
9 collision frames	The number of frames that are successfully sent on an interface after nine collisions occur.
10 collision frames	The number of frames that are successfully sent on an interface after ten collisions occur.
11 collision frames	The number of frames that are successfully sent on an interface after 11 collisions occur.
12 collision frames	The number of frames that are successfully sent on an interface after 12 collisions occur.
13 collision frames	The number of frames that are successfully sent on an interface after 13 collisions occur.
14 collision frames	The number of frames that are successfully sent on an interface after 14 collisions occur.
15 collision frames	The number of frames that are successfully sent on an interface after 15 collisions occur.
Excessive collisions	The number of frames that could not be sent on an interface after 16 collisions occur.
Late collisions	After a frame is sent, the number of frames dropped because late collisions were detected while the frame was sent.
VLAN discard frames	The number of frames dropped on an interface because the CFI <sup>1</sup> bit is set.
Excess defer frames	The number of frames that are not sent after the time exceeds the maximum-packet time.
64 byte frames	The total number of frames sent on an interface that are 64 bytes.
127 byte frames	The total number of frames sent on an interface that are from 65 to 127 bytes.
255 byte frames	The total number of frames sent on an interface that are from 128 to 255 bytes.
511 byte frames	The total number of frames sent on an interface that are from 256 to 511 bytes.
1023 byte frames	The total number of frames sent on an interface that are from 512 to 1023 bytes.
1518 byte frames	The total number of frames sent on an interface that are from 1024 to 1518 bytes.
Too large frames	The number of frames sent on an interface that are larger than the maximum allowed frame size.
Good (1 coll) frames	The number of frames that are successfully sent on an interface after one collision occurs. This value does not include the number of frames that are not successfully sent after one collision occurs.

1. CFI = Canonical Format Indicator

**Table 2-8** *Receive Field Descriptions*

Field	Description
Bytes	The total amount of memory (in bytes) used by frames received on an interface, including the FCS <sup>1</sup> value and the incorrectly formed frames. This value excludes the frame header bits.
Unicast frames	The total number of frames successfully received on the interface that are directed to unicast addresses.
Multicast frames	The total number of frames successfully received on the interface that are directed to multicast addresses.
Broadcast frames	The total number of frames successfully received on an interface that are directed to broadcast addresses.

**Table 2-8** Receive Field Descriptions (continued)

Field	Description
Unicast bytes	The total amount of memory (in bytes) used by unicast frames received on an interface, including the FCS value and the incorrectly formed frames. This value excludes the frame header bits.
Multicast bytes	The total amount of memory (in bytes) used by multicast frames received on an interface, including the FCS value and the incorrectly formed frames. This value excludes the frame header bits.
Broadcast bytes	The total amount of memory (in bytes) used by broadcast frames received on an interface, including the FCS value and the incorrectly formed frames. This value excludes the frame header bits.
Alignment errors	The total number of frames received on an interface that have alignment errors.
FCS errors	The total number of frames received on an interface that have a valid length (in bytes) but do not have the correct FCS values.
Oversize frames	The number of frames received on an interface that are larger than the maximum allowed frame size.
Undersize frames	The number of frames received on an interface that are smaller than 64 bytes.
Collision fragments	The number of collision fragments received on an interface.
Minimum size frames	The total number of frames that are the minimum frame size.
65 to 127 byte frames	The total number of frames that are from 65 to 127 bytes.
128 to 255 byte frames	The total number of frames that are from 128 to 255 bytes.
256 to 511 byte frames	The total number of frames that are from 256 to 511 bytes.
512 to 1023 byte frames	The total number of frames that are from 512 to 1023 bytes.
1024 to 1518 byte frames	The total number of frames that are from 1024 to 1518 bytes.
Overrun frames	The total number of overrun frames received on an interface.
Pause frames	The number of pause frames received on an interface.
Symbol error frames	The number of frames received on an interface that have symbol errors.
Invalid frames, too large	The number of frames received that were larger than maximum allowed MTU <sup>2</sup> size (including the FCS bits and excluding the frame header) and that have either an FCS error or an alignment error.
Valid frames, too large	The number of frames received on an interface that are larger than the maximum allowed frame size.
Invalid frames, too small	The number of frames received that are smaller than 64 bytes (including the FCS bits and excluding the frame header) and that have either an FCS error or an alignment error.
Valid frames, too small	The number of frames received on an interface that are smaller than 64 bytes (or 68 bytes for VLAN-tagged frames) and that have valid FCS values. The frame size includes the FCS bits but excludes the frame header bits.
Too old frames	The number of frames dropped on the ingress port because the packet aged out.
Valid oversize frames	The number of frames received on an interface that are larger than the maximum allowed frame size and have valid FCS values. The frame size includes the FCS value but does not include the VLAN tag.

Table 2-8 Receive Field Descriptions (continued)

Field	Description
System FCS error frames	The total number of frames received on an interface that have a valid length (in bytes) but that do not have the correct FCS values.
RxPortFifoFull drop frames	The total number of frames received on an interface that are dropped because the ingress queue is full.

1. FCS = frame check sequence
2. MTU = maximum transmission unit

This is an example of output from the **show controllers ethernet-controller phy** command for a specific interface:

```
Switch# show controllers ethernet-controller gigabitethernet0/2 phy
GigabitEthernet0/2 (gpn: 2, port-number: 2)
-----
Port      Conf-Media  Active-Media Attached
-----
Gi0/1    auto-select none          0 -Not Present
Gi0/2    auto-select none          0 -Not Present
-----
Other Information
-----
Port asic num       : 0
Port asic port num  : 1
XCVR init completed : 0
Embedded PHY        : not present
SFP presence index  : 0
SFP iter cnt        : 2564163d
SFP failed oper flag : 0x00000000
IIC error cnt       : 0
IIC error dsb cnt   : 0
IIC max sts cnt     : 0
Chk for link status : 1
Link Status         : 0
<output truncated>
```

This is an example of output from the **show controllers ethernet-controller port-asic configuration** command:

```
Switch# show controllers ethernet-controller port-asic configuration
-----
Switch 1, PortASIC 0 Registers
-----
DeviceType           : 000101BC
Reset                : 00000000
PmadMicConfig        : 00000001
PmadMicDiag          : 00000003
SupervisorReceiveFifoSramInfo : 000007D0 000007D0 40000000
SupervisorTransmitFifoSramInfo : 000001D0 000001D0 40000000
GlobalStatus         : 00000800
IndicationStatus     : 00000000
IndicationStatusMask : FFFFFFFF
InterruptStatus      : 00000000
InterruptStatusMask  : 01FFE800
SupervisorDiag       : 00000000
SupervisorFrameSizeLimit : 000007C8
SupervisorBroadcast  : 000A0F01
GeneralIO            : 000003F9 00000000 00000004
```

```

StackPcsInfo          : FFFF1000 860329BD 5555FFFF FFFFFFFF
                      : FF0FFF00 86020000 5555FFFF 00000000
StackRacInfo          : 73001630 00000003 7F001644 00000003
                      : 24140003 FD632B00 18E418E0 FFFFFFFF
StackControlStatus   : 18E418E0
stackControlStatusMask : FFFFFFFF
TransmitBufferFreeListInfo : 00000854 00000800 00000FF8 00000000
                      : 0000088A 0000085D 00000FF8 00000000
TransmitRingFifoInfo : 00000016 00000016 40000000 00000000
                      : 0000000C 0000000C 40000000 00000000
TransmitBufferInfo    : 00012000 00000FFF 00000000 00000030
TransmitBufferCommonCount : 00000F7A
TransmitBufferCommonCountPeak : 0000001E
TransmitBufferCommonCommonEmpty : 000000FF
NetworkActivity       : 00000000 00000000 00000000 02400000
DroppedStatistics     : 00000000
FrameLengthDeltaSelect : 00000001
SneakPortFifoInfo    : 00000000
MacInfo               : 0EC0801C 00000001 0EC0801B 00000001
                      : 00C0001D 00000001 00C0001E 00000001

```

<output truncated>

This is an example of output from the **show controllers ethernet-controller port-asic statistics** command:

```

Switch# show controllers ethernet-controller port-asic statistics
=====
Switch 1, PortASIC 0 Statistics
-----
      0 RxQ-0, wt-0 enqueue frames          0 RxQ-0, wt-0 drop frames
4118966 RxQ-0, wt-1 enqueue frames          0 RxQ-0, wt-1 drop frames
      0 RxQ-0, wt-2 enqueue frames          0 RxQ-0, wt-2 drop frames

      0 RxQ-1, wt-0 enqueue frames          0 RxQ-1, wt-0 drop frames
    296 RxQ-1, wt-1 enqueue frames          0 RxQ-1, wt-1 drop frames
2836036 RxQ-1, wt-2 enqueue frames          0 RxQ-1, wt-2 drop frames

      0 RxQ-2, wt-0 enqueue frames          0 RxQ-2, wt-0 drop frames
      0 RxQ-2, wt-1 enqueue frames          0 RxQ-2, wt-1 drop frames
158377 RxQ-2, wt-2 enqueue frames          0 RxQ-2, wt-2 drop frames

      0 RxQ-3, wt-0 enqueue frames          0 RxQ-3, wt-0 drop frames
      0 RxQ-3, wt-1 enqueue frames          0 RxQ-3, wt-1 drop frames
      0 RxQ-3, wt-2 enqueue frames          0 RxQ-3, wt-2 drop frames

15 TxBufferFull Drop Count                 0 Rx Fcs Error Frames
      0 TxBufferFrameDesc BadCrc16          0 Rx Invalid Oversize Frames
      0 TxBuffer Bandwidth Drop Cou         0 Rx Invalid Too Large Frames
      0 TxQueue Bandwidth Drop Coun         0 Rx Invalid Too Large Frames
      0 TxQueue Missed Drop Statist         0 Rx Invalid Too Small Frames
74 RxBuffer Drop DestIndex Cou             0 Rx Too Old Frames
      0 SneakQueue Drop Count               0 Tx Too Old Frames
      0 Learning Queue Overflow Fra         0 System Fcs Error Frames
      0 Learning Cam Skip Count

15 Sup Queue 0 Drop Frames                  0 Sup Queue 8 Drop Frames
      0 Sup Queue 1 Drop Frames              0 Sup Queue 9 Drop Frames
      0 Sup Queue 2 Drop Frames              0 Sup Queue 10 Drop Frames
      0 Sup Queue 3 Drop Frames              0 Sup Queue 11 Drop Frames
      0 Sup Queue 4 Drop Frames              0 Sup Queue 12 Drop Frames
      0 Sup Queue 5 Drop Frames              0 Sup Queue 13 Drop Frames
      0 Sup Queue 6 Drop Frames              0 Sup Queue 14 Drop Frames

```

■ **show controllers ethernet-controller**

```

          0 Sup Queue 7 Drop Frames          0 Sup Queue 15 Drop Frames
=====
Switch 1, PortASIC 1 Statistics
-----
          0 RxQ-0, wt-0 enqueue frames      0 RxQ-0, wt-0 drop frames
        52 RxQ-0, wt-1 enqueue frames      0 RxQ-0, wt-1 drop frames
          0 RxQ-0, wt-2 enqueue frames      0 RxQ-0, wt-2 drop frames

<output truncated>

```

**Related Commands**

Command	Description
<a href="#">show controllers cpu-interface</a>	Displays the state of the CPU network ASIC and send and receive statistics for packets reaching the CPU.
<a href="#">show controllers tcam</a>	Displays the state of registers for all ternary content addressable memory (TCAM) in the system and for TCAM interface ASICs that are CAM controllers.

# show controllers tcam

Use the **show controllers tcam** privileged EXEC command to display the state of the registers for all ternary content addressable memory (TCAM) in the system and for all TCAM interface ASICs that are CAM controllers.

```
show controllers tcam [asic [number]] [detail] [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>asic</b>	(Optional) Display port ASIC TCAM information.
<b>number</b>	(Optional) Display information for the specified port ASIC number. The range is from 0 to 15.
<b>detail</b>	(Optional) Display detailed TCAM register information.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** This display provides information that might be useful for Cisco technical support representatives troubleshooting the switch.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show controllers tcam** command:

```
Switch# show controllers tcam
```

```
-----  
TCAM-0 Registers  
-----
```

```
REV:      00B30103  
SIZE:     00080040  
ID:       00000000  
CCR:      00000000_F0000020  
  
RPID0:    00000000_00000000  
RPID1:    00000000_00000000  
RPID2:    00000000_00000000  
RPID3:    00000000_00000000  
  
HRR0:     00000000_E000CAFC  
HRR1:     00000000_00000000  
HRR2:     00000000_00000000
```

## show controllers tcam

```

HRR3:  00000000_00000000
HRR4:  00000000_00000000
HRR5:  00000000_00000000
HRR6:  00000000_00000000
HRR7:  00000000_00000000
<output truncated>

GMR31:  FF_FFFFFFFF_FFFFFFFF
GMR32:  FF_FFFFFFFF_FFFFFFFF
GMR33:  FF_FFFFFFFF_FFFFFFFF

=====
TCAM related PortASIC 1 registers
=====
LookupType:                89A1C67D_24E35F00
LastCamIndex:              0000FFE0
LocalNoMatch:              000069E0
ForwardingRamBaseAddress:
                           00022A00 0002FE00 00040600 0002FE00 0000D400
                           00000000 003FBA00 00009000 00009000 00040600
                           00000000 00012800 00012900

```

### Related Commands

Command	Description
<a href="#">show controllers cpu-interface</a>	Displays the state of the CPU network ASIC and send and receive statistics for packets reaching the CPU.
<a href="#">show controllers ethernet-controller</a>	Displays per-interface send and receive statistics read from the hardware or the interface internal registers.

# show controllers utilization

Use the **show controllers utilization** user EXEC command to display bandwidth utilization on the switch or specific ports.

```
show controllers [interface-id] utilization [ | { begin | exclude | include } expression]
```

Syntax Description	
<i>interface-id</i>	(Optional) ID of the switch interface.
<b>begin</b>	(Optional) Display begins with the line that matches the specified <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the specified <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show controllers utilization** command.

```
Switch> show controllers utilization
Port          Receive Utilization  Transmit Utilization
Fa0/1         0                    0
Fa0/2         0                    0
Fa0/3         0                    0
Fa0/4         0                    0
Fa0/5         0                    0
Fa0/6         0                    0
Fa0/7         0                    0
<output truncated>

<output truncated>

Switch Receive Bandwidth Percentage Utilization : 0
Switch Transmit Bandwidth Percentage Utilization : 0

Switch Fabric Percentage Utilization : 0
```

This is an example of output from the **show controllers utilization** command on a specific port:

```
Switch> show controllers gigabitethernet0/1 utilization
Receive Bandwidth Percentage Utilization : 0
Transmit Bandwidth Percentage Utilization : 0
```

**Table 2-9** *show controllers utilization Field Descriptions*

Field	Description
Receive Bandwidth Percentage Utilization	Displays the received bandwidth usage of the switch, which is the sum of the received traffic on all the ports divided by the switch receive capacity.
Transmit Bandwidth Percentage Utilization	Displays the transmitted bandwidth usage of the switch, which is the sum of the transmitted traffic on all the ports divided it by the switch transmit capacity.
Fabric Percentage Utilization	Displays the average of the transmitted and received bandwidth usage of the switch.

**Related Commands**

Command	Description
<a href="#">show controllers ethernet-controller</a>	Displays the interface internal registers.

# show dot1x

Use the **show dot1x** user EXEC command to display IEEE 802.1x statistics, administrative status, and operational status for the switch or for the specified port.

```
show dot1x [{all [summary] | interface interface-id} [details | statistics]] [| {begin | exclude | include} expression]
```

Syntax Description	
<b>all</b> [summary]	(Optional) Display the IEEE 802.1x status for all ports.
<b>interface</b> <i>interface-id</i>	(Optional) Display the IEEE 802.1x status for the specified port (including type, module, and port number).
<b>details</b>	(Optional) Display the IEEE 802.1x interface details.
<b>statistics</b>	(Optional) Display IEEE 802.1x statistics for the specified port.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** If you do not specify a port, global parameters and a summary appear. If you specify a port, details for that port appear.

If the port control is configured as unidirectional or bidirectional control and this setting conflicts with the switch configuration, the **show dot1x {all | interface *interface-id*}** privileged EXEC command output has this information:

```
ControlDirection          = In (Inactive)
```

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* appear.

**Examples**

This is an example of output from the **show dot1x** user EXEC command:

```
Switch> show dot1x
Sysauthcontrol           Enabled
Dot1x Protocol Version   2
Critical Recovery Delay   100
Critical EAPOL            Disabled
```

This is an example of output from the **show dot1x all** user EXEC command:

```
Switch> show dot1x all
Sysauthcontrol           Enabled
Dot1x Protocol Version   2
Critical Recovery Delay   100
Critical EAPOL            Disabled

Dot1x Info for GigabitEthernet0/1
-----
PAE                       = AUTHENTICATOR
PortControl               = AUTO
ControlDirection         = Both
HostMode                  = SINGLE_HOST
ReAuthentication          = Disabled
QuietPeriod               = 60
ServerTimeout            = 30
SuppTimeout              = 30
ReAuthPeriod             = 3600 (Locally configured)
ReAuthMax                 = 2
MaxReq                    = 2
TxPeriod                  = 30
RateLimitPeriod          = 0
```

<output truncated>

This is an example of output from the **show dot1x all summary** user EXEC command:

Interface	PAE	Client	Status
Gi0/1	AUTH	none	UNAUTHORIZED
Gi0/2	AUTH	00a0.c9b8.0072	AUTHORIZED
Gi0/3	AUTH	none	UNAUTHORIZED

This is an example of output from the **show dot1x interface interface-id** user EXEC command:

```
Switch> show dot1x interface gigabitethernet0/2
Dot1x Info for GigabitEthernet0/2
-----
PAE                       = AUTHENTICATOR
PortControl               = AUTO
ControlDirection         = In
HostMode                  = SINGLE_HOST
ReAuthentication          = Disabled
QuietPeriod               = 60
ServerTimeout            = 30
SuppTimeout              = 30
ReAuthPeriod             = 3600 (Locally configured)
ReAuthMax                 = 2
MaxReq                    = 2
TxPeriod                  = 30
RateLimitPeriod          = 0
```

This is an example of output from the **show dot1x interface *interface-id* details** user EXEC command:

```
Switch# show dot1x interface gigabitEthernet0/2 details
Dot1x Info for GigabitEthernet0/2
-----
PAE = AUTHENTICATOR
PortControl = AUTO
ControlDirection = Both
HostMode = SINGLE_HOST
ReAuthentication = Disabled
QuietPeriod = 60
ServerTimeout = 30
SuppTimeout = 30
ReAuthPeriod = 3600 (Locally configured)
ReAuthMax = 2
MaxReq = 2
TxPeriod = 30
RateLimitPeriod = 0

Dot1x Authenticator Client List Empty
```

This is an example of output from the **show dot1x interface *interface-id* details** command when a port is assigned to a guest VLAN and the host mode changes to multiple-hosts mode:

```
Switch# show dot1x interface gigabitEthernet0/1 details
Dot1x Info for GigabitEthernet0/1
-----
PAE = AUTHENTICATOR
PortControl = AUTO
ControlDirection = Both
HostMode = SINGLE_HOST
ReAuthentication = Enabled
QuietPeriod = 60
ServerTimeout = 30
SuppTimeout = 30
ReAuthPeriod = 3600 (Locally configured)
ReAuthMax = 2
MaxReq = 2
TxPeriod = 30
RateLimitPeriod = 0
Guest-Vlan = 182

Dot1x Authenticator Client List Empty

Port Status = AUTHORIZED
Authorized By = Guest-Vlan
Operational HostMode = MULTI_HOST
Vlan Policy = 182
```

This is an example of output from the **show dot1x interface *interface-id* statistics** command. [Table 2-10](#) describes the fields in the display.

```
Switch> show dot1x interface gigabitEthernet0/2 statistics
Dot1x Authenticator Port Statistics for GigabitEthernet0/2
-----
RxStart = 0      RxLogoff = 0      RxResp = 1      RxRespID = 1
RxInvalid = 0    RxLenErr = 0      RxTotal = 2

TxReq = 2        TxReqID = 132     TxTotal = 134

RxVersion = 2    LastRxSrcMAC = 00a0.c9b8.0072
```

**Table 2-10** *show dot1x statistics Field Descriptions*

<b>Field</b>	<b>Description</b>
RxStart	Number of valid EAPOL-start frames that have been received.
RxLogoff	Number of EAPOL-logoff frames that have been received.
RxResp	Number of valid EAP-response frames (other than response/identity frames) that have been received.
RxRespID	Number of EAP-response/identity frames that have been received.
RxInvalid	Number of EAPOL frames that have been received and have an unrecognized frame type.
RxLenError	Number of EAPOL frames that have been received in which the packet body length field is invalid.
RxTotal	Number of valid EAPOL frames of any type that have been received.
TxReq	Number of EAP-request frames (other than request/identity frames) that have been sent.
TxReqId	Number of Extensible Authentication Protocol (EAP)-request/identity frames that have been sent.
TxTotal	Number of Extensible Authentication Protocol over LAN (EAPOL) frames of any type that have been sent.
RxVersion	Number of received packets in the IEEE 802.1x Version 1 format.
LastRxSrcMac	Source MAC address carried in the most recently received EAPOL frame.

**Related Commands**

<b>Command</b>	<b>Description</b>
<a href="#">dot1x default</a>	Resets the IEEE 802.1x parameters to their default values.

# show dtp

Use the **show dtp** privileged EXEC command to display Dynamic Trunking Protocol (DTP) information for the switch or for a specified interface.

```
show dtp [interface interface-id] [ | { begin | exclude | include } expression]
```

## Syntax Description

<b>interface</b>	(Optional) Display port security settings for the specified interface. Valid interfaces include physical ports (including type, module, and port number).
<b>interface-id</b>	
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<b>expression</b>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

## Examples

This is an example of output from the **show dtp** command:

```
Switch# show dtp
Global DTP information
  Sending DTP Hello packets every 30 seconds
  Dynamic Trunk timeout is 300 seconds
  21 interfaces using DTP
```

This is an example of output from the **show dtp interface** command:

```
Switch# show dtp interface gigabitethernet0/1
DTP information for GigabitEthernet0/1:
  TOS/TAS/TNS:                ACCESS/AUTO/ACCESS
  TOT/TAT/TNT:                NATIVE/NEGOTIATE/NATIVE
  Neighbor address 1:          000943A7D081
  Neighbor address 2:          000000000000
  Hello timer expiration (sec/state): 1/RUNNING
  Access timer expiration (sec/state): never/STOPPED
  Negotiation timer expiration (sec/state): never/STOPPED
  Multidrop timer expiration (sec/state): never/STOPPED
  FSM state:                   S2:ACCESS
  # times multi & trunk        0
  Enabled:                     yes
  In STP:                      no
```

## ■ show dtp

```

Statistics
-----
3160 packets received (3160 good)
0 packets dropped
    0 nonegotiate, 0 bad version, 0 domain mismatches, 0 bad TLVs, 0 other
6320 packets output (6320 good)
    3160 native
0 output errors
0 trunk timeouts
1 link ups, last link up on Mon Mar 01 1993, 01:02:29
0 link downs

```

**Related Commands**

<b>Command</b>	<b>Description</b>
<a href="#">show interfaces trunk</a>	Displays interface trunking information.

# show eap

Use the **show eap** privileged EXEC command to display Extensible Authentication Protocol (EAP) registration and session information for the switch or for the specified port.

```
show eap {{registrations [method [name] | transport [name]] | {sessions [credentials name
[interface interface-id] | interface interface-id | method name | transport name]]}
[credentials name | interface interface-id | transport name] [ | {begin | exclude | include}
expression]}
```

## Syntax Description

<b>registrations</b>	Display EAP registration information.
<b>method</b> <i>name</i>	(Optional) Display EAP method registration information.
<b>transport</b> <i>name</i>	(Optional) Display EAP transport registration information.
<b>sessions</b>	Display EAP session information.
<b>credentials</b> <i>name</i>	(Optional) Display EAP method registration information.
<b>interface</b> <i>interface-id</i>	(Optional) Display the EAP information for the specified port (including type, module, and port number).
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

When you use the **show eap registrations** privileged EXEC command with these keywords, the command output shows this information:

- **None**—All the lower levels used by EAP and the registered EAP methods.
- **method** *name* keyword—The specified method registrations.
- **transport** *name* keyword—The specific lower-level registrations.

When you use the **show eap sessions** privileged EXEC command with these keywords, the command output shows this information:

- **None**—All active EAP sessions.
- **credentials** *name* keyword—The specified credentials profile.
- **interface** *interface-id* keyword—The parameters for the specified interface.
- **method** *name* keyword—The specified EAP method.
- **transport** *name* keyword—The specified lower layer.

Expressions are case sensitive. For example, if you enter **l exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show eap registrations** privileged EXEC command:

```
Switch> show eap registrations
Registered EAP Methods:
  Method  Type      Name
    4     Peer      MD5

Registered EAP Lower Layers:
  Handle  Type      Name
    2     Authenticator  Dot1x-Authenticator
    1     Authenticator  MAB
```

This is an example of output from the **show eap registrations transport** privileged user EXEC command:

```
Switch> show eap registrations transport all
Registered EAP Lower Layers:
  Handle  Type      Name
    2     Authenticator  Dot1x-Authenticator
    1     Authenticator  MAB
```

This is an example of output from the **show eap sessions** privileged EXEC command:

```
Switch> show eap sessions
Role: Authenticator Decision: Fail
Lower layer: Dot1x-AuthenticataInterface: Gi0/1
Current method: None Method state: Uninitialised
Retransmission count: 0 (max: 2) Timer: Authenticator
ReqId Retransmit (timeout: 30s, remaining: 2s)
EAP handle: 0x5200000A Credentials profile: None
Lower layer context ID: 0x93000004 Eap profile name: None
Method context ID: 0x00000000 Peer Identity: None
Start timeout (s): 1 Retransmit timeout (s): 30 (30)
Current ID: 2 Available local methods: None

Role: Authenticator Decision: Fail
Lower layer: Dot1x-AuthenticataInterface: Gi0/2
Current method: None Method state: Uninitialised
Retransmission count: 0 (max: 2) Timer: Authenticator
ReqId Retransmit (timeout: 30s, remaining: 2s)
EAP handle: 0xA800000B Credentials profile: None
Lower layer context ID: 0x0D000005 Eap profile name: None
Method context ID: 0x00000000 Peer Identity: None
Start timeout (s): 1 Retransmit timeout (s): 30 (30)
Current ID: 2 Available local methods: None

<Output truncated>
```

This is an example of output from the **show eap sessions interface *interface-id*** privileged EXEC command:

```
Switch# show eap sessions gigabitethernet0/1
Role: Authenticator Decision: Fail
Lower layer: Dot1x-AuthenticataInterface: Gi0/1
Current method: None Method state: Uninitialised
Retransmission count: 1 (max: 2) Timer: Authenticator
ReqId Retransmit (timeout: 30s, remaining: 13s)
EAP handle: 0x5200000A Credentials profile: None
Lower layer context ID: 0x93000004 Eap profile name: None
Method context ID: 0x00000000 Peer Identity: None
Start timeout (s): 1 Retransmit timeout (s): 30 (30)
Current ID: 2 Available local methods: None
```

#### Related Commands

Command	Description
<a href="#">clear eap sessions</a>	Clears EAP session information for the switch or for the specified port.

# show env

Use the **show env** user EXEC command to display fan, temperature, redundant power system (RPS) availability, and power information for the switch.

```
show env {all | fan | power | rps | temperature} [| {begin | exclude | include} expression]
```

Syntax Description		
<b>all</b>		Display both fan and temperature environmental status.
<b>fan</b>		Display the switch fan status.
<b>power</b>		Display the switch power status.
<b>rps</b>		Display whether an RPS 300 Redundant Power System is connected to the switch.
<b>temperature</b>		Display the switch temperature status.
<b>  begin</b>	(Optional)	Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional)	Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional)	Display includes lines that match the specified <i>expression</i> .
<i>expression</i>		Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show env all** command:

```
Switch> show env all
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is AVAILABLE
```

This is an example of output from the **show env fan** command:

```
Switch> show env fan
FAN is OK
```

# show errdisable detect

Use the **show errdisable detect** user EXEC command to display error-disabled detection status.

```
show errdisable detect [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** A displayed `gbic-invalid` error reason refers to an invalid small form-factor pluggable (SFP) module. Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

The error-disable reasons in the command output are listed in alphabetical order. The mode column shows how error disable is configured for each feature.

You can configure error-disabled detection in these modes:

- port mode—The entire physical port is error disabled if a violation occurs.
- vlan mode—The VLAN is error disabled if a violation occurs.
- port/vlan mode—The entire physical port is error disabled on some ports and per-VLAN error disabled on other ports.

**Examples** This is an example of output from the **show errdisable detect** command:

```
Switch> show errdisable detect
ErrDisable Reason    Detection    Mode
-----
arp-inspection       Enabled     port
bpduguard            Enabled     vlan
channel-misconfig    Enabled     port
community-limit     Enabled     port
dhcp-rate-limit      Enabled     port
dtp-flap             Enabled     port
gbic-invalid         Enabled     port
inline-power         Enabled     port
invalid-policy       Enabled     port
l2ptguard            Enabled     port
link-flap            Enabled     port
loopback             Enabled     port
```

## ■ show errdisable detect

lsgroup	Enabled	port
pagp-flap	Enabled	port
psecure-violation	Enabled	port/vlan
security-violatio	Enabled	port
sfp-config-mismat	Enabled	port
storm-control	Enabled	port
udld	Enabled	port
vmps	Enabled	port

### Related Commands

Command	Description
<a href="#">errdisable detect cause</a>	Enables error-disabled detection for a specific cause or all causes.
<a href="#">show errdisable flap-values</a>	Displays error condition recognition information.
<a href="#">show errdisable recovery</a>	Displays error-disabled recovery timer information.
<a href="#">show interfaces status</a>	Displays interface status or a list of interfaces in error-disabled state.

# show errdisable flap-values

Use the **show errdisable flap-values** user EXEC command to display conditions that cause an error to be recognized for a cause.

**show errdisable flap-values** [ | { **begin** | **exclude** | **include** } *expression* ]

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** The *Flaps* column in the display shows how many changes to the state within the specified time interval will cause an error to be detected and a port to be disabled. For example, the display shows that an error will be assumed and the port shut down if three Dynamic Trunking Protocol (DTP)-state (port mode access/trunk) or Port Aggregation Protocol (PAgP) flap changes occur during a 30-second interval, or if 5 link-state (link up/down) changes occur during a 10-second interval.

```
ErrDisable Reason    Flaps    Time (sec)
-----
pagp-flap           3         30
dtp-flap            3         30
link-flap           5         10
```

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show errdisable flap-values** command:

```
Switch> show errdisable flap-values
ErrDisable Reason    Flaps    Time (sec)
-----
pagp-flap           3         30
dtp-flap            3         30
link-flap           5         10
```

Related Commands	Command	Description
	<a href="#">errdisable detect cause</a>	Enables error-disabled detection for a specific cause or all causes.
	<a href="#">show errdisable detect</a>	Displays error-disabled detection status.
	<a href="#">show errdisable recovery</a>	Displays error-disabled recovery timer information.
	<a href="#">show interfaces status</a>	Displays interface status or a list of interfaces in error-disabled state.

# show errdisable recovery

Use the **show errdisable recovery** user EXEC command to display the error-disabled recovery timer information.

**show errdisable recovery** [ | { **begin** | **exclude** | **include** } *expression*]

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** A *gbic-invalid error-disable* reason refers to an invalid small form-factor pluggable (SFP) module interface.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show errdisable recovery** command:

```
Switch> show errdisable recovery
ErrDisable Reason    Timer Status
-----
udld                 Disabled
bpduguard            Disabled
security-violatio    Disabled
channel-misconfig    Disabled
vmps                 Disabled
pagp-flap            Disabled
dtp-flap             Disabled
link-flap            Enabled
psecure-violation    Disabled
gbic-invalid         Disabled
dhcp-rate-limit      Disabled
unicast-flood        Disabled
storm-control        Disabled
loopback             Disabled
```

## show errdisable recovery

```

Timer interval:300 seconds

Interfaces that will be enabled at the next timeout:

Interface      Errdisable reason      Time left(sec)
-----
Gi0/2          link-flap               279

```



### Note

Though visible in the output, the unicast-flood field is not valid.

### Related Commands

Command	Description
<a href="#">errdisable recovery</a>	Configures the recover mechanism variables.
<a href="#">show errdisable detect</a>	Displays error-disabled detection status.
<a href="#">show errdisable flap-values</a>	Displays error condition recognition information.
<a href="#">show interfaces status</a>	Displays interface status or a list of interfaces in error-disabled state.

# show etherchannel

Use the **show etherchannel** user EXEC command to display EtherChannel information for a channel.

```
show etherchannel [channel-group-number {detail | port | port-channel | protocol | summary}]
                 {detail | load-balance | port | port-channel | protocol | summary} [ | {begin | exclude |
include} expression]
```

Syntax Description	
<i>channel-group-number</i>	(Optional) Number of the channel group. The range is 1 to 6.
<b>detail</b>	Display detailed EtherChannel information.
<b>load-balance</b>	Display the load-balance or frame-distribution scheme among ports in the port channel.
<b>port</b>	Display EtherChannel port information.
<b>port-channel</b>	Display port-channel information.
<b>protocol</b>	Display the protocol that is being used in the EtherChannel.
<b>summary</b>	Display a one-line summary per channel-group.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

Command Modes	
	User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

Usage Guidelines	
	If you do not specify a <i>channel-group</i> , all channel groups are displayed. Expressions are case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> are not displayed, but the lines that contain <i>Output</i> are displayed.

**Examples**

This is an example of output from the **show etherchannel 1 detail** command:

```
Switch> show etherchannel 1 detail
Group state = L2
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP
          Ports in the group:
          -----
Port: Gi0/1
-----

Port state      = Up Mstr In-Bndl
Channel group = 1          Mode = Active          Gcchange = -
Port-channel   = Po1      GC = -              Pseudo port-channel = Po1
Port index     = 0          Load = 0x00          Protocol = LACP

Flags: S - Device is sending Slow LACPDUs   F - Device is sending fast LACPDU
      A - Device is in active mode.         P - Device is in passive mode.

Local information:

Port      Flags  State      LACP port  Admin  Oper  Port  Port
Gi0/1    SA     bndl      32768      0x0    0x1   0x0   0x3D

Age of the port in the current state: 01d:20h:06m:04s

          Port-channels in the group:
          -----

Port-channel: Po1      (Primary Aggregator)
-----

Age of the Port-channel = 01d:20h:20m:26s
Logical slot/port = 10/1          Number of ports = 2
HotStandBy port = null
Port state      = Port-channel Ag-Inuse
Protocol        = LACP

Ports in the Port-channel:

Index  Load  Port      EC state      No of bits
-----+-----+-----+-----+-----
  0     00   Gi0/1     Active        0
  0     00   Gi0/2     Active        0

Time since last port bundled: 01d:20h:20m:20s   Gi0/2
```

This is an example of output from the **show etherchannel 1 summary** command:

```
Switch> show etherchannel 1 summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       u - unsuitable for bundling
       U - in use       f - failed to allocate aggregator
       d - default port
```

```
Number of channel-groups in use: 1
Number of aggregators:          1
```

```
Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
1      Po1(SU)          LACP       Gi0/1(P)  Gi0/2(P)
```

This is an example of output from the **show etherchannel 1 port-channel** command:

```
Switch> show etherchannel 1 port-channel
          Port-channels in the group:
          -----
Port-channel: Po1      (Primary Aggregator)

-----

Age of the Port-channel   = 01d:20h:24m:50s
Logical slot/port        = 10/1           Number of ports = 2
HotStandBy port = null
Port state                = Port-channel Ag-Inuse
Protocol                  = LACP
```

Ports in the Port-channel:

```
Index  Load  Port      EC state    No of bits
-----+-----+-----+-----+-----
0      00    Gi0/1     Active      0
0      00    Gi0/2     Active      0
```

```
Time since last port bundled: 01d:20h:24m:44s  Gi0/2
```

This is an example of output from the **show etherchannel protocol** command:

```
Switch# show etherchannel protocol
          Channel-group listing:
          -----
Group: 1
-----
Protocol: LACP

Group: 2
-----
Protocol: PAgP
```

## Related Commands

Command	Description
<a href="#">channel-group</a>	Assigns an Ethernet port to an EtherChannel group.
<a href="#">channel-protocol</a>	Restricts the protocol used on a port to manage channeling.
<a href="#">interface port-channel</a>	Accesses or creates the port channel.

# show fallback profile

Use the **show fallback profile** privileged EXEC command to display the fallback profiles that are configured on a switch.

```
show fallback profile [append | begin | exclude | include | { [redirect | tee] url} expression]
```

Syntax Description	
<b>append</b>	(Optional) Append redirected output to a specified URL
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<b>redirect</b>	(Optional) Copy output to a specified URL.
<b>tee</b>	(Optional) Copy output to a specified URL.
<i>expression</i>	Expression in the output to use as a reference point.
<i>url</i>	Specified URL where output is directed.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Use the **show fallback profile** privileged EXEC command to display profiles that are configured on the switch.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples** This is an example of output from the **show fallback profile** command:

```
switch# show fallback profile
Profile Name: dot1x-www
-----
Description          : NONE
IP Admission Rule    : webauth-fallback
IP Access-Group IN: default-policy
Profile Name: dot1x-www-lpip
-----
Description          : NONE
IP Admission Rule    : web-lpip
IP Access-Group IN: default-policy
Profile Name: profile1
-----
Description          : NONE
IP Admission Rule    : NONE
IP Access-Group IN: NONE
```

Related Commands	Command	Description
	<a href="#">dot1x fallback profile</a>	Configure a port to use web authentication as a fallback method for clients that do not support IEEE 802.1x authentication.
	<a href="#">fallback profile profile</a>	Create a web authentication fallback profile.
	<a href="#">show dot1x [interface interface-id]</a>	Displays IEEE 802.1x status for the specified port.

# show flowcontrol

Use the **show flowcontrol** user EXEC command to display the flow control status and statistics.

```
show flowcontrol [interface interface-id | module number] [ | {begin | exclude | include}
expression]
```

Syntax Description	
<b>interface</b> <i>interface-id</i>	(Optional) Display the flow control status and statistics for a specific interface.
<b>module</b> <i>number</i>	(Optional) Display the flow control status and statistics for all interfaces on the switch. The only valid module number is 1. This option is not available if you have entered a specific interface ID.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Use this command to display the flow control status and statistics on the switch or for a specific interface. Use the **show flowcontrol** command to display information about all the switch interfaces. The output from the **show flowcontrol** command is the same as the output from the **show flowcontrol module number** command.

Use the **show flowcontrol interface interface-id** command to display information about a specific interface.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show flowcontrol** command.

```
Switch> show flowcontrol
Port          Send FlowControl  Receive FlowControl  RxPause  TxPause
              admin   oper             admin   oper
-----
Gi0/1         Unsupp.  Unsupp.  off     off     0       0
Gi0/2         desired  off      off     off     0       0
Gi0/3         desired  off      off     off     0       0
<output truncated>
```

This is an example of output from the **show flowcontrol interface *interface-id*** command:

```
Switch> show flowcontrol gigabitethernet0/2
Port      Send FlowControl  Receive FlowControl  RxPause  TxPause
          admin    oper    admin    oper
-----
Gi0/2     desired off     off     off     0       0
```

#### Related Commands

Command	Description
<a href="#">flowcontrol</a>	Sets the receive flow-control state for an interface.

# show interfaces

Use the **show interfaces** privileged EXEC command to display the administrative and operational status of all interfaces or a specified interface.

```
show interfaces [interface-id | vlan vlan-id] [accounting | capabilities [module number] |
counters | description | etherchannel | flowcontrol | pruning | stats | status [err-disabled] |
switchport [backup | module number] | transceiver [properties | detail] [module number] |
trunk] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>interface-id</i>	(Optional) Valid interfaces include physical ports (including type, module, and port number) and port channels. The port-channel range is 1 to 6.
<b>vlan</b> <i>vlan-id</i>	(Optional) VLAN identification. The range is 1 to 4094.
<b>accounting</b>	(Optional) Display accounting information on the interface, including active protocols and input and output packets and octets.  <b>Note</b> The display shows only packets processed in software; hardware-switched packets do not appear.
<b>capabilities</b>	(Optional) Display the capabilities of all interfaces or the specified interface, including the features and options that you can configure on the interface. Though visible in the command line help, this option is not available for VLAN IDs.
<i>module number</i>	(Optional) Display <b>capabilities</b> , <b>switchport</b> configuration, or <b>transceiver</b> characteristics (depending on preceding keyword) of all interfaces on the switch. The only valid module number is 1. This option is not available if you entered a specific interface ID.
<b>counters</b>	(Optional) See the <b>show interfaces counters</b> command.
<b>description</b>	(Optional) Display the administrative status and description set for an interface.
<b>etherchannel</b>	(Optional) Display interface EtherChannel information.
<b>flowcontrol</b>	(Optional) Display interface flowcontrol information
<b>pruning</b>	(Optional) Display interface trunk VTP pruning information.
<b>stats</b>	(Optional) Display the input and output packets by switching path for the interface.
<b>status</b>	(Optional) Display the status of the interface. A status of <i>unsupported</i> in the Type field means that a non-Cisco small form-factor pluggable (SFP) module is inserted in the module slot.
<b>err-disabled</b>	(Optional) Display interfaces in error-disabled state.
<b>switchport</b>	(Optional) Display the administrative and operational status of a switching port, including port blocking and port protection settings.
<b>backup</b>	(Optional) Display Flex Link backup interface configuration and status for the specified interface or all interfaces on the switch.
<b>transceiver</b> [ <b>detail</b>   <b>properties</b> ]	(Optional) Display the physical properties of a CWDM <sup>1</sup> or DWDM <sup>2</sup> small form-factor (SFP) module interface. The keywords have these meanings: <ul style="list-style-type: none"> <li><b>detail</b>—(Optional) Display calibration properties, including high and low numbers and any alarm information.</li> <li><b>properties</b>—(Optional) Display speed and duplex settings on an interface.</li> </ul>

<b>trunk</b>	Display interface trunk information. If you do not specify an interface, only information for active trunking ports appears.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

- coarse wavelength-division multiplexer
- dense wavelength-division multiplexer

**Note**

Though visible in the command-line help strings, the **crb**, **fair-queue**, **irb**, **mac-accounting**, **precedence**, **random-detect**, **rate-limit**, and **shape** keywords are not supported.

**Command Modes**

Privileged EXEC

**Command History**

Release	Modification
12.2(37)EY	This command was introduced.

**Usage Guidelines**

The **show interfaces capabilities** command with different keywords has these results:

- Use the **show interfaces capabilities module 1** to display the capabilities of all interfaces on the switch. Entering any other number is invalid.
- Use the **show interfaces interface-id capabilities** to display the capabilities of the specified interface.
- Use the **show interfaces capabilities** (with no module number or interface ID) to display the capabilities of all interfaces on the switch.
- Use the **show interfaces switchport module 1** to display the switch port characteristics of all interfaces on the switch. Entering any other number is invalid.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

**Examples**

This is an example of output from the **show interfaces** command for an interface:

```
Switch# show interfaces gigabitethernet0/2
GigabitEthernet0/2 is down, line protocol is down
  Hardware is Gigabit Ethernet, address is 0009.43a7.d085 (bia 0009.43a7.d085)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Auto-duplex, Auto-speed
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00 Last input never, output never, output hang never
  Last clearing of "show interfaces" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
```

```

Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  2 packets input, 1040 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
  4 packets output, 1040 bytes, 0 underruns
    0 output errors, 0 collisions, 3 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier, 0 PAUSE output
    0 output buffer failures, 0 output buffers swapped out

```

This is an example of output from the **show interfaces accounting** command.

```

Switch# show interfaces accounting
Vlan1
          Protocol    Pkts In   Chars In   Pkts Out   Chars Out
          IP          1094395  131900022   559555    84077157
          Spanning Tree  283896   17033760    42         2520
          ARP          63738    3825680    231        13860
Interface Vlan2 is disabled
Vlan7
          Protocol    Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.
Vlan31
          Protocol    Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.

GigabitEthernet0/1
          Protocol    Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.
GigabitEthernet0/2
          Protocol    Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.

<output truncated>

```

This is an example of output from the **show interfaces capabilities** command for an interface.

```
Switch# show interfaces gigabitethernet0/2 capabilities
GigabitEthernet0/2
  Model:                WS-C2960G-24TC-L
  Type:                 10/100/1000BaseTX
  Speed:               10,100,1000,auto
  Duplex:              full,auto
  Trunk encap. type:   802.1Q
  Trunk mode:          on,off,desirable,nonegotiate
  Channel:             yes
  Broadcast suppression: percentage(0-100)
  Flowcontrol:         rx-(off,on,desired),tx-(none)
  Fast Start:          yes
  QoS scheduling:      rx-(not configurable on per port basis),tx-(4q2t)
  CoS rewrite:         yes
  ToS rewrite:         yes
  UDLD:               yes
  Inline power:        no
  SPAN:               source/destination
  PortSecure:          yes
  Dot1x:              yes
  Multiple Media Types: rj45, sfp, auto-select
```

This is an example of output from the **show interfaces interface description** command when the interface has been described as *Connects to Marketing* by using the **description** interface configuration command.

```
Switch# show interfaces gigabitethernet0/2 description
Interface Status      Protocol Description
Gi0/2                up                down        Connects to Marketing
```

This is an example of output from the **show interfaces etherchannel** command when port channels are configured on the switch:

```
Switch# show interfaces etherchannel
----
Port-channel1:
Age of the Port-channel   = 03d:20h:17m:29s
Logical slot/port        = 10/1           Number of ports = 0
GC                       = 0x00000000       HotStandBy port = null
Port state                = Port-channel Ag-Not-Inuse

Port-channel2:
Age of the Port-channel   = 03d:20h:17m:29s
Logical slot/port        = 10/2           Number of ports = 0
GC                       = 0x00000000       HotStandBy port = null
Port state                = Port-channel Ag-Not-Inuse

Port-channel3:
Age of the Port-channel   = 03d:20h:17m:29s
Logical slot/port        = 10/3           Number of ports = 0
GC                       = 0x00000000       HotStandBy port = null
Port state                = Port-channel Ag-Not-Inuse
```

This is an example of output from the **show interfaces interface-id pruning** command when pruning is enabled in the VTP domain:

```
Switch# show interfaces gigabitethernet0/2 pruning
Port      Vlans pruned for lack of request by neighbor
Gi0/2     3,4

Port      Vlans traffic requested of neighbor
Gi0/2     1-3
```

This is an example of output from the **show interfaces stats** command for a specified VLAN interface.

```
Switch# show interfaces vlan 1 stats
Switching path   Pkts In   Chars In   Pkts Out   Chars Out
      Processor  1165354  136205310  570800    91731594
      Route cache      0         0          0         0
      Total        1165354  136205310  570800    91731594
```

This is an example of partial output from the **show interfaces status** command. It displays the status of all interfaces.

```
Switch# show interfaces status
Port      Name                Status      Vlan      Duplex  Speed Type
Gi0/1     Gi0/1               notconnect  1         auto    auto  10/100/1000BaseTX
Gi0/2     Gi0/2               notconnect  1         auto    auto  10/100/1000BaseTX
Gi0/3     Gi0/3               notconnect  1         auto    auto  10/100/1000BaseTX
Gi0/4     Gi0/4               notconnect  1         auto    auto  10/100/1000BaseTX
Gi0/5     Gi0/5               notconnect  1         auto    auto  10/100/1000BaseTX
Gi0/6     Gi0/6               notconnect  1         auto    auto  10/100/1000BaseTX
```

<output truncated>

This is an example of output from the **show interfaces status err-disabled** command. It displays the status of interfaces in the error-disabled state.

```
Switch# show interfaces status err-disabled
Port      Name                Status      Reason
Gi0/2     Gi0/2               err-disabled dtp-flap
```

This is an example of output from the **show interfaces switchport** command for a port. [Table 2-11](#) describes the fields in the display.



#### Note

Private VLANs are not supported in this release, so those fields are not applicable.

```
Switch# show interfaces gigabitethernet0/1 switchport
Name: Gi0/1
Switchport: Enabled
Administrative Mode: dynamic auto
Operational Mode: static access
Administrative Trunking Encapsulation: negotiate
Operational Trunking Encapsulation: native
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association:10 (VLAN0010) 502 (VLAN0502)
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL

Protected: false
Unknown unicast blocked: disabled
Unknown multicast blocked: disabled

Voice VLAN: none (Inactive)
```

```
Appliance trust: none
```

**Table 2-11** *show interfaces switchport Field Descriptions*

Field	Description
Name	Displays the port name.
Switchport	Displays the administrative and operational status of the port. In this display, the port is in switchport mode.
Administrative Mode	Displays the administrative and operational modes.
Operational Mode	
Administrative Trunking Encapsulation	Displays the administrative and operational encapsulation method and whether trunking negotiation is enabled.
Operational Trunking Encapsulation	
Negotiation of Trunking	
Access Mode VLAN	Displays the VLAN ID to which the port is configured.
Trunking Native Mode VLAN	Lists the VLAN ID of the trunk that is in native mode. Lists the allowed VLANs on the trunk. Lists the active VLANs on the trunk.
Trunking VLANs Enabled	
Trunking VLANs Active	
Pruning VLANs Enabled	Lists the VLANs that are pruning-eligible.
Protected	Displays whether or not protected port is enabled (True) or disabled (False) on the interface.
Unknown unicast blocked	Displays whether or not unknown multicast and unknown unicast traffic is blocked on the interface.
Unknown multicast blocked	
Voice VLAN	Displays the VLAN ID on which voice VLAN is enabled.
Appliance trust	Displays the class of service (CoS) setting of the data packets of the IP phone.

This is an example of output from the **show interfaces switchport backup** command:

```
Switch# show interfaces switchport backup
Switch Backup Interface Pairs:
  Active Interface   Backup Interface   State
  -----
  Fa0/1             Fa0/2             Active Up/Backup Standby
  Fa0/3             Fa0/5             Active Down/Backup Up
  Po1               Po2               Active Standby/Backup Up
```

This is an example of out put from the **show interfaces switchport backup** command when a Flex Link interface goes down (LINK\_DOWN), and VLANs preferred on this interface are moved to the peer interface of the Flex Link pair. In this example, if interface Gi0/6 goes down, Gi0/8 carries all VLANs of the Flex Link pair.

```
Switch#show interfaces switchport backup
Switch Backup Interface Pairs:

Active Interface           Backup Interface           State
-----
GigabitEthernet0/6       GigabitEthernet0/8       Active Down/Backup Up
```

```
Vlans Preferred on Active Interface: 1-50
Vlans Preferred on Backup Interface: 60, 100-120
```

This is an example of output from the **show interfaces switchport backup** command. In this example, VLANs 1 to 50, 60, and 100 to 120 are configured on the switch:

```
Switch(config)#interface gigabitEthernet 0/6
Switch(config-if)#switchport backup interface gigabitEthernet 0/8 prefer vlan 60,100-120
```

When both interfaces are up, Gi0/8 forwards traffic for VLANs 60, 100 to 120, and Gi0/6 will forward traffic for VLANs 1 to 50.

```
Switch#show interfaces switchport backup
Switch Backup Interface Pairs:
```

Active Interface	Backup Interface	State
GigabitEthernet0/6	GigabitEthernet0/8	Active Up/Backup Up

```
Vlans on Interface Gi 0/6: 1-50
Vlans on Interface Gi 0/8: 60, 100-120
```

When a Flex Link interface goes down (LINK\_DOWN), VLANs preferred on this interface are moved to the peer interface of the Flex Link pair. In this example, if interface Gi0/6 goes down, Gi0/8 carries all VLANs of the Flex Link pair.

```
Switch#show interfaces switchport backup
Switch Backup Interface Pairs:
```

Active Interface	Backup Interface	State
GigabitEthernet0/6	GigabitEthernet0/8	Active Down/Backup Up

```
Vlans on Interface Gi 0/6:
Vlans on Interface Gi 0/8: 1-50, 60, 100-120
```

When a Flex Link interface comes up, VLANs preferred on this interface are blocked on the peer interface and moved to the forwarding state on the interface that has just come up. In this example, if interface Gi0/6 comes up, then VLANs preferred on this interface are blocked on the peer interface Gi0/8 and forwarded on Gi0/6.

```
Switch#show interfaces switchport backup
Switch Backup Interface Pairs:
```

Active Interface	Backup Interface	State
GigabitEthernet0/6	GigabitEthernet0/8	Active Up/Backup Up

```
Vlans on Interface Gi 0/6: 1-50
Vlans on Interface Gi 0/8: 60, 100-120
```

This is an example of output from the **show interfaces interface-id pruning** command:

```
Switch# show interfaces gigabitEthernet0/2 pruning
Port Vlans pruned for lack of request by neighbor
```

This is an example of output from the **show interfaces interface-id trunk** command. It displays trunking information for the port.

```
Switch# show interfaces gigabitEthernet0/1 trunk
Port Mode Encapsulation Status Native vlan
Gi0/1 auto negotiate trunking 1

Port Vlans allowed on trunk
```

```

Gi0/1          1-4094

Port          Vlans allowed and active in management domain
Gi0/1        1-4

Port          Vlans in spanning tree forwarding state and not pruned
Gi0/1        1-4

```

This is an example of output from the **show interfaces *interface-id* transceiver properties** command:

```

Switch# show interfaces gigabitethernet0/1 transceiver properties
Name : Gi0/1
Administrative Speed: auto
Operational Speed: auto
Administrative Duplex: auto
Administrative Power Inline: N/A
Operational Duplex: auto
Administrative Auto-MDIX: off
Operational Auto-MDIX: off
Configured Media: sfp
Active Media: sfp
Attached: 10/100/1000BaseTX SFP-10/100/1000BaseTX

```

This is an example of output from the **show interfaces *interface-id* transceiver detail** command:

```

Switch# show interfaces gigabitethernet0/3 transceiver detail
ITU Channel not available (Wavelength not available),
Transceiver is externally calibrated.
mA:milliamperes, dBm:decibels (milliwatts), N/A:not applicable.
++:high alarm, +:high warning, -:low warning, -- :low alarm.
A2D readouts (if they differ), are reported in parentheses.
The threshold values are uncalibrated.

```

Port	Temperature (Celsius)	High Alarm Threshold (Celsius)	High Warn Threshold (Celsius)	Low Warn Threshold (Celsius)	Low Alarm Threshold (Celsius)
Gi0/3	41.5	110.0	103.0	-8.0	-12.0

  

Port	Voltage (Volts)	High Alarm Threshold (Volts)	High Warn Threshold (Volts)	Low Warn Threshold (Volts)	Low Alarm Threshold (Volts)
Gi0/3	3.20	4.00	3.70	3.00	2.95

  

Port	Current (milliamperes)	High Alarm Threshold (mA)	High Warn Threshold (mA)	Low Warn Threshold (mA)	Low Alarm Threshold (mA)
Gi0/3	31.0	84.0	70.0	4.0	2.0

  

Port	Optical Transmit Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Alarm Threshold (dBm)
Gi0/3	-0.0 ( -0.0)	-0.0	-0.0	-0.0	-0.0

  

Port	Optical Receive Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Alarm Threshold (dBm)
Gi0/3	N/A ( -0.0) --	-0.0	-0.0	-0.0	-0.0

Related Commands	Command	Description
	<a href="#">switchport access</a>	Configures a port as a static-access or a dynamic-access port.
	<a href="#">switchport block</a>	Blocks unknown unicast or multicast traffic on an interface.
	<a href="#">switchport block</a>	Configures Flex Links, a pair of Layer 2 interfaces that provide mutual backup.
	<a href="#">switchport mode</a>	Configures the VLAN membership mode of a port.
	<a href="#">switchport protected</a>	Isolates unicast, multicast, and broadcast traffic at Layer 2 from other protected ports on the same switch.
	<a href="#">switchport trunk pruning</a>	Configures the VLAN pruning-eligible list for ports in trunking mode.

# show interfaces counters

Use the **show interfaces counters** privileged EXEC command to display various counters for the switch or for a specific interface.

```
show interfaces [interface-id | vlan vlan-id] counters [errors | etherchannel | protocol status |
trunk] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>interface-id</i>	(Optional) ID of the physical interface, including type, module, and port number.
<b>errors</b>	(Optional) Display error counters.
<b>etherchannel</b>	(Optional) Display EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.
<b>protocol status</b>	(Optional) Display status of protocols enabled on interfaces.
<b>trunk</b>	(Optional) Display trunk counters.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.



## Note

Though visible in the command-line help string, the **vlan** *vlan-id* keyword is not supported.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

If you do not enter any keywords, all counters for all interfaces are included.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

## Examples

This is an example of partial output from the **show interfaces counters** command. It displays all counters for the switch.

```
Switch# show interfaces counters
Port           InOctets    InUcastPkts  InMcastPkts  InBcastPkts
Gi0/1          0            0             0             0
Gi0/2          0            0             0             0

<output truncated>
```

This is an example of partial output from the **show interfaces counters protocol status** command for all interfaces.

```
Switch# show interfaces counters protocol status
Protocols allocated:
Vlan1: Other, IP
Vlan20: Other, IP, ARP
Vlan30: Other, IP, ARP
Vlan40: Other, IP, ARP
Vlan50: Other, IP, ARP
Vlan60: Other, IP, ARP
Vlan70: Other, IP, ARP
Vlan80: Other, IP, ARP
Vlan90: Other, IP, ARP
Vlan900: Other, IP, ARP
Vlan3000: Other, IP
Vlan3500: Other, IP
FastEthernet0/1: Other, IP, ARP, CDP
FastEthernet0/2: Other, IP
FastEthernet0/3: Other, IP
FastEthernet0/4: Other, IP
FastEthernet0/5: Other, IP
FastEthernet0/6: Other, IP
FastEthernet0/7: Other, IP
FastEthernet0/8: Other, IP
FastEthernet0/9: Other, IP
FastEthernet0/10: Other, IP, CDP
```

<output truncated>

This is an example of output from the **show interfaces counters trunk** command. It displays trunk counters for all interfaces.

```
Switch# show interfaces counters trunk
Port          TrunkFramesTx  TrunkFramesRx  WrongEncap
Gi0/1         0               0               0
Gi0/2         0               0               0
Gi0/3         80678          4155           0
Gi0/4         82320          126            0
Gi1/0/5       0               0               0
```

<output truncated>

#### Related Commands

Command	Description
<a href="#">show interfaces</a>	Displays additional interface characteristics.

# show inventory

Use the **show inventory** user EXEC command to display product identification (PID) information for the hardware.

```
show inventory [entity-name | raw] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>entity-name</i>	(Optional) Display the specified entity. For example, enter the interface (such as gigabitethernet0/1) into which a small form-factor pluggable (SFP) module is installed.
<b>raw</b>	(Optional) Display every entity in the device.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

The command is case sensitive. With no arguments, the **show inventory** command produces a compact dump of all identifiable entities that have a product identifier. The compact dump displays the entity location (slot identity), entity description, and the unique device identifier (UDI) (PID, VID, and SN) of that entity.



### Note

If there is no PID, no output appears when you enter the **show inventory** command.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

## Examples

This is example output from the **show inventory** command:

```
Switch> show inventory
NAME: "1", DESCR: "WS-C2960-48TC-L"
PID: WS-C2960-24TC-L , VID: 02 , SN: FHH0923D075

NAME: "GigabitEthernet0/1", DESCR: "100BaseBX-10D SFP"
PID: , VID: , SN: NEC09050251

NAME: "GigabitEthernet0/2", DESCR: "100BaseBX-10U SFP"
PID: , VID: , SN: NEC09050020
```

# show ip igmp profile

Use the **show ip igmp profile** privileged EXEC command to display all configured Internet Group Management Protocol (IGMP) profiles or a specified IGMP profile.

**show ip igmp profile** [*profile number*] [ | { **begin** | **exclude** | **include** } *expression*]

## Syntax Description

<i>profile number</i>	(Optional) The IGMP profile number to be displayed. The range is 1 to 4294967295. If no profile number is entered, all IGMP profiles are displayed.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

## Examples

These are examples of output from the **show ip igmp profile** privileged EXEC command, with and without specifying a profile number. If no profile number is entered, the display includes all profiles configured on the switch.

```
Switch# show ip igmp profile 40
IGMP Profile 40
  permit
  range 233.1.1.1 233.255.255.255
```

```
Switch# show ip igmp profile
IGMP Profile 3
  range 230.9.9.0 230.9.9.0
IGMP Profile 4
  permit
  range 229.9.9.0 229.255.255.255
```

## Related Commands

Command	Description
<a href="#">ip igmp profile</a>	Configures the specified IGMP profile number.

# show ip igmp snooping

Use the **show ip igmp snooping** user EXEC command to display the Internet Group Management Protocol (IGMP) snooping configuration of the switch or the VLAN.

```
show ip igmp snooping [groups | mrouter | querier] [vlan vlan-id] [ | {begin | exclude | include}
expression]
```

Syntax Description	
<b>groups</b>	(Optional) See the <a href="#">show ip igmp snooping groups</a> command.
<b>mrouter</b>	(Optional) See the <a href="#">show ip igmp snooping mrouter</a> command.
<b>querier</b>	(Optional) See the <a href="#">show ip igmp snooping querier</a> command.
<b>vlan <i>vlan-id</i></b>	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094 (available only in privileged EXEC mode).
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Use this command to display snooping configuration for the switch or for a specific VLAN. VLAN IDs 1002 to 1005 are reserved for Token Ring and FDDI VLANs and cannot be used in IGMP snooping.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show ip igmp snooping vlan 1** command. It shows snooping characteristics for a specific VLAN.

```
Switch# show ip igmp snooping vlan 1
Global IGMP Snooping configuration:
-----
IGMP snooping                :Enabled
IGMPv3 snooping (minimal)    :Enabled
Report suppression           :Enabled
TCN solicit query            :Disabled
TCN flood query count        :2
Last member query interval   : 100

Vlan 1:
-----
```

## show ip igmp snooping

```
IGMP snooping                :Enabled
Immediate leave              :Disabled
Multicast router learning mode :pim-dvmrp
Source only learning age timer :10
CGMP interoperability mode    :IGMP_ONLY
Last member query interval   : 100
```

This is an example of output from the **show ip igmp snooping** command. It displays snooping characteristics for all VLANs on the switch.

```
Switch> show ip igmp snooping
Global IGMP Snooping configuration:
-----
IGMP snooping                : Enabled
IGMPv3 snooping (minimal)    : Enabled
Report suppression           : Enabled
TCN solicit query            : Disabled
TCN flood query count        : 2
Last member query interval    : 100

Vlan 1:
-----
IGMP snooping                :Enabled
Immediate leave              :Disabled
Multicast router learning mode :pim-dvmrp
Source only learning age timer :10
CGMP interoperability mode    :IGMP_ONLY
Last member query interval    : 100

Vlan 2:
-----
IGMP snooping                :Enabled
Immediate leave              :Disabled
Multicast router learning mode :pim-dvmrp
Source only learning age timer :10
CGMP interoperability mode    :IGMP_ONLY
Last member query interval    : 333

<output truncated>
```

### Related Commands

Command	Description
<a href="#">ip igmp snooping</a>	Enables IGMP snooping on the switch or on a VLAN.
<a href="#">ip igmp snooping last-member-query-interval</a>	Enables the IGMP snooping configurable-leave timer.
<a href="#">ip igmp snooping querier</a>	Enables the IGMP querier function in Layer 2 networks.
<a href="#">ip igmp snooping report-suppression</a>	Enables IGMP report suppression.
<a href="#">ip igmp snooping tcn</a>	Configures the IGMP topology change notification behavior.
<a href="#">ip igmp snooping tcn flood</a>	Specifies multicast flooding as the IGMP spanning-tree topology change notification behavior.
<a href="#">ip igmp snooping vlan immediate-leave</a>	Enables IGMP snooping immediate-leave processing on a VLAN.
<a href="#">ip igmp snooping vlan mrouter</a>	Adds a multicast router port or configures the multicast learning method.

Command	Description
<code>ip igmp snooping vlan static</code>	Statically adds a Layer 2 port as a member of a multicast group.
<code>show ip igmp snooping groups</code>	Displays the IGMP snooping multicast table for the switch.
<code>show ip igmp snooping mrouter</code>	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.
<code>show ip igmp snooping querier</code>	Displays the configuration and operation information for the IGMP querier configured on a switch.

# show ip igmp snooping groups

Use the **show ip igmp snooping groups** privileged EXEC command to display the Internet Group Management Protocol (IGMP) snooping multicast table for the switch or the multicast information. Use with the **vlan** keyword to display the multicast table for a specified multicast VLAN or specific multicast information.

```
show ip igmp snooping groups [count | dynamic [count] | user [count]] [ | {begin | exclude | include} expression]
```

```
show ip igmp snooping groups vlan vlan-id [ip_address | count | dynamic [count] | user [count]] [ | {begin | exclude | include} expression]
```

## Syntax Description

<b>count</b>	(Optional) Display the total number of entries for the specified command options instead of the actual entries.
<b>dynamic</b>	(Optional) Display entries learned by IGMP snooping.
<b>user</b>	(Optional) Display only the user-configured multicast entries.
<i>ip_address</i>	(Optional) Display characteristics of the multicast group with the specified group IP address.
<b>vlan</b> <i>vlan-id</i>	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Use this command to display multicast information or the multicast table.

VLAN IDs 1002 to 1005 are reserved for Token Ring and FDDI VLANs and cannot be used in IGMP snooping.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples**

This is an example of output from the **show ip igmp snooping groups** command without any keywords. It displays the multicast table for the switch.

```
Switch# show ip igmp snooping groups
Vlan      Group      Type      Version    Port List
-----
104       224.1.4.2  igmp      v2         Gi0/1, Gi0/2
104       224.1.4.3  igmp      v2         Gi0/1, Gi0/2
```

This is an example of output from the **show ip igmp snooping groups count** command. It displays the total number of multicast groups on the switch.

```
Switch# show ip igmp snooping groups count
Total number of multicast groups: 2
```

This is an example of output from the **show ip igmp snooping groups dynamic** command. It shows only the entries learned by IGMP snooping.

```
Switch# show ip igmp snooping groups vlan 1 dynamic
Vlan      Group      Type      Version    Port List
-----
104       224.1.4.2  igmp      v2         Gi0/1, Fa0/15
104       224.1.4.3  igmp      v2         Gi0/1, Fa0/15
```

This is an example of output from the **show ip igmp snooping groups vlan *vlan-id ip-address*** command. It shows the entries for the group with the specified IP address.

```
Switch# show ip igmp snooping groups vlan 104 224.1.4.2
Vlan      Group      Type      Version    Port List
-----
104       224.1.4.2  igmp      v2         Gi0/1, Fa0/15
```

**Related Commands**

Command	Description
<a href="#">ip igmp snooping</a>	Enables IGMP snooping on the switch or on a VLAN.
<a href="#">ip igmp snooping vlan mrouter</a>	Configures a multicast router port.
<a href="#">ip igmp snooping vlan static</a>	Statically adds a Layer 2 port as a member of a multicast group.
<a href="#">show ip igmp snooping</a>	Displays the IGMP snooping configuration of the switch or the VLAN.
<a href="#">show ip igmp snooping mrouter</a>	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.

# show ip igmp snooping mrouter

Use the **show ip igmp snooping mrouter** privileged EXEC command to display the Internet Group Management Protocol (IGMP) snooping dynamically learned and manually configured multicast router ports for the switch or for the specified multicast VLAN.

```
show ip igmp snooping mrouter [vlan vlan-id] [ | {begin | exclude | include} expression]
```

Syntax Description		
<b>vlan</b> <i>vlan-id</i>	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094.	
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .	
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .	
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .	
<i>expression</i>	Expression in the output to use as a reference point.	

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines**

Use this command to display multicast router ports on the switch or for a specific VLAN. VLAN IDs 1002 to 1005 are reserved for Token Ring and FDDI VLANs and cannot be used in IGMP snooping.

When multicast VLAN registration (MVR) is enabled, the **show ip igmp snooping mrouter** command displays MVR multicast router information and IGMP snooping information.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show ip igmp snooping mrouter** command. It shows how to display multicast router ports on the switch.

```
Switch# show ip igmp snooping mrouter
Vlan      ports
----      -
  1       Gi0/1(dynamic)
```

Related Commands	Command	Description
	<a href="#">ip igmp snooping</a>	Enables IGMP snooping on the switch or on a VLAN.
	<a href="#">ip igmp snooping vlan mrouter</a>	Adds a multicast router port.
	<a href="#">ip igmp snooping vlan static</a>	Statically adds a Layer 2 port as a member of a multicast group.
	<a href="#">show ip igmp snooping</a>	Displays the IGMP snooping configuration of the switch or the VLAN
	<a href="#">show ip igmp snooping groups</a>	Displays IGMP snooping multicast information for the switch or for the specified parameter.

# show ip igmp snooping querier

Use the **show ip igmp snooping querier detail** user EXEC command to display the configuration and operation information for the IGMP querier configured on a switch.

```
show ip igmp snooping querier [detail | vlan vlan-id [detail]] [ | {begin | exclude | include}
expression]
```

Syntax Description		
<b>detail</b>		Optional) Display detailed IGMP querier information.
<b>vlan <i>vlan-id</i> [detail]</b>		Optional) Display IGMP querier information for the specified VLAN. The range is 1 to 1001 and 1006 to 4094. Use the <b>detail</b> keyword to display detailed information.
<b>  begin</b>		(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>		(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>		(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>		Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Use the **show ip igmp snooping querier** command to display the IGMP version and the IP address of a detected device, also called a *querier*, that sends IGMP query messages. A subnet can have multiple multicast routers but has only one IGMP querier. In a subnet running IGMPv2, one of the multicast routers is elected as the querier. The querier can be a Layer 3 switch.

The **show ip igmp snooping querier** command output also shows the VLAN and the interface on which the querier was detected. If the querier is the switch, the output shows the *Port* field as *Router*. If the querier is a router, the output shows the port number on which the querier is learned in the *Port* field.

The **show ip igmp snooping querier detail** user EXEC command is similar to the **show ip igmp snooping querier** command. However, the **show ip igmp snooping querier** command displays only the device IP address most recently detected by the switch querier.

The **show ip igmp snooping querier detail** command displays the device IP address most recently detected by the switch querier and this additional information:

- The elected IGMP querier in the VLAN
- The configuration and operational information pertaining to the switch querier (if any) that is configured in the VLAN

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples**

This is an example of output from the **show ip igmp snooping querier** command:

```
Switch> show ip igmp snooping querier
Vlan      IP Address      IGMP Version      Port
-----
1         172.20.50.11   v3                 Gi0/1
2         172.20.40.20   v2                 Router
```

This is an example of output from the **show ip igmp snooping querier detail** command:

```
Switch> show ip igmp snooping querier detail

Vlan      IP Address      IGMP Version      Port
-----
1         1.1.1.1         v2                 Fa0/1

Global IGMP switch querier status
-----
admin state           : Enabled
admin version         : 2
source IP address     : 0.0.0.0
query-interval (sec)  : 60
max-response-time (sec) : 10
querier-timeout (sec) : 120
tcn query count       : 2
tcn query interval (sec) : 10

Vlan 1: IGMP switch querier status
-----
elected querier is 1.1.1.1      on port Fa0/1
-----
admin state           : Enabled
admin version         : 2
source IP address     : 10.1.1.65
query-interval (sec)  : 60
max-response-time (sec) : 10
querier-timeout (sec) : 120
tcn query count       : 2
tcn query interval (sec) : 10
operational state     : Non-Querier
operational version   : 2
tcn query pending count : 0
```

**Related Commands**

Command	Description
<a href="#">ip igmp snooping</a>	Enables IGMP snooping on the switch or on a VLAN.
<a href="#">ip igmp snooping querier</a>	Enables the IGMP querier function in Layer 2 networks.
<a href="#">show ip igmp snooping</a>	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.

# show lacp

Use the **show lacp** user EXEC command to display Link Aggregation Control Protocol (LACP) channel-group information.

```
show lacp [channel-group-number] {counters | internal | neighbor | sys-id} [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>channel-group-number</i>	(Optional) Number of the channel group. The range is 1 to 6.
<b>counters</b>	Display traffic information.
<b>internal</b>	Display internal information.
<b>neighbor</b>	Display neighbor information.
<b>sys-id</b>	Display the system identifier that is being used by LACP. The system identifier is made up of the LACP system priority and the switch MAC address.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

You can enter any **show lacp** command to display the active channel-group information. To display specific channel information, enter the **show lacp** command with a channel-group number.

If you do not specify a channel group, information for all channel groups appears.

You can enter the *channel-group-number* option to specify a channel group for all keywords except **sys-id**.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples**

This is an example of output from the **show lacp counters** user EXEC command. [Table 2-12](#) describes the fields in the display.

```
Switch> show lacp counters
          LACPDU          Marker      Marker Response      LACPDU
Port      Sent   Recv      Sent   Recv      Sent   Recv      Pkts Err
-----
Channel group:1
Gi0/1      19    10         0     0         0     0         0
Gi0/2      14     6         0     0         0     0         0
```

**Table 2-12** *show lacp counters Field Descriptions*

Field	Description
LACPDUs Sent and Recv	The number of LACP packets sent and received by a port.
Marker Sent and Recv	The number of LACP marker packets sent and received by a port.
Marker Response Sent and Recv	The number of LACP marker response packets sent and received by a port.
LACPDUs Pkts and Err	The number of unknown and illegal packets received by LACP for a port.

This is an example of output from the **show lacp internal** command:

```
Switch> show lacp 1 internal
Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode           P - Device is in Passive mode

Channel group 1

Port      Flags  State      LACP port  Admin  Oper  Port  Port
Gi0/1     SA     bndl      32768      0x3    0x3   0x4   0x3D
Gi0/2     SA     bndl      32768      0x3    0x3   0x5   0x3D
```

Table 2-13 describes the fields in the display:

**Table 2-13** *show lacp internal Field Descriptions*

Field	Description
State	<p>State of the specific port. These are the allowed values:</p> <ul style="list-style-type: none"> <li>• <b>—</b>—Port is in an unknown state.</li> <li>• <b>bndl</b>—Port is attached to an aggregator and bundled with other ports.</li> <li>• <b>susp</b>—Port is in a suspended state; it is not attached to any aggregator.</li> <li>• <b>hot-sby</b>—Port is in a hot-standby state.</li> <li>• <b>indiv</b>—Port is incapable of bundling with any other port.</li> <li>• <b>indep</b>—Port is in an independent state (not bundled but able to switch data traffic. In this case, LACP is not running on the partner port).</li> <li>• <b>down</b>—Port is down.</li> </ul>
LACP Port Priority	Port priority setting. LACP uses the port priority to put ports s in standby mode when there is a hardware limitation that prevents all compatible ports from aggregating.
Admin Key	Administrative key assigned to this port. LACP automatically generates an administrative key value as a hexadecimal number. The administrative key defines the ability of a port to aggregate with other ports. A port's ability to aggregate with other ports is determined by the port physical characteristics (for example, data rate and duplex capability) and configuration restrictions that you establish.
Oper Key	Runtime operational key that is being used by this port. LACP automatically generates this value as a hexadecimal number.
Port Number	Port number.
Port State	<p>State variables for the port, encoded as individual bits within a single octet with these meanings:</p> <ul style="list-style-type: none"> <li>• bit0: LACP_Activity</li> <li>• bit1: LACP_Timeout</li> <li>• bit2: Aggregation</li> <li>• bit3: Synchronization</li> <li>• bit4: Collecting</li> <li>• bit5: Distributing</li> <li>• bit6: Defaulted</li> <li>• bit7: Expired</li> </ul> <p><b>Note</b> In the list above, bit7 is the MSB and bit0 is the LSB.</p>

This is an example of output from the **show lacp neighbor** command:

```
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
```

Channel group 3 neighbors

Partner's information:

Port	Partner System ID	Partner Port Number	Age	Partner Flags
Gi0/1	32768,0007.eb49.5e80	0xC	19s	SP
	LACP Partner Port Priority	Partner Oper Key	Partner Port State	
	32768	0x3	0x3C	

Partner's information:

Port	Partner System ID	Partner Port Number	Age	Partner Flags
Gi0/2	32768,0007.eb49.5e80	0xD	15s	SP
	LACP Partner Port Priority	Partner Oper Key	Partner Port State	
	32768	0x3	0x3C	

This is an example of output from the **show lacp sys-id** command:

```
Switch> show lacp sys-id
32765,0002.4b29.3a00
```

The system identification is made up of the system priority and the system MAC address. The first two bytes are the system priority, and the last six bytes are the globally administered individual MAC address associated to the system.

#### Related Commands

Command	Description
<a href="#">clear lacp</a>	Clears the LACP channel-group information.
<a href="#">lacp port-priority</a>	Configures the LACP port priority.
<a href="#">lacp system-priority</a>	Configures the LACP system priority.

# show mac address-table

Use the **show mac address-table** user EXEC command to display a specific MAC address table static and dynamic entry or the MAC address table static and dynamic entries on a specific interface or VLAN.

```
show mac address-table [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show mac address-table** command:

```
Switch> show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
All     0000.0000.0001   STATIC  CPU
All     0000.0000.0002   STATIC  CPU
All     0000.0000.0003   STATIC  CPU
All     0000.0000.0009   STATIC  CPU
All     0000.0000.0012   STATIC  CPU
All     0180.c200.000b   STATIC  CPU
All     0180.c200.000c   STATIC  CPU
All     0180.c200.000d   STATIC  CPU
All     0180.c200.000e   STATIC  CPU
All     0180.c200.000f   STATIC  CPU
All     0180.c200.0010   STATIC  CPU
1       0030.9441.6327   DYNAMIC Gi0/4
Total Mac Addresses for this criterion: 12
```

Related Commands	Command	Description
	<b>clear mac address-table dynamic</b>	Deletes from the MAC address table a specific dynamic address, all dynamic addresses on a particular interface, or all dynamic addresses on a particular VLAN.
	<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
	<b>show mac address-table count</b>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<b>show mac address-table dynamic</b>	Displays dynamic MAC address table entries only.
	<b>show mac address-table interface</b>	Displays the MAC address table information for the specified interface.
	<b>show mac address-table notification</b>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<b>show mac address-table static</b>	Displays static MAC address table entries only.
	<b>show mac address-table vlan</b>	Displays the MAC address table information for the specified VLAN.

# show mac address-table address

Use the **show mac address-table address** user EXEC command to display MAC address table information for the specified MAC address.

```
show mac address-table address mac-address [interface interface-id] [vlan vlan-id] [ | { begin | exclude | include } expression ]
```

Syntax Description		
<i>mac-address</i>		Specify the 48-bit MAC address; the valid format is H.H.H.
<b>interface</b> <i>interface-id</i>		(Optional) Display information for a specific interface. Valid interfaces include physical ports and port channels.
<b>vlan</b> <i>vlan-id</i>		(Optional) Display entries for the specific VLAN only. The range is 1 to 4094.
<b>begin</b>		(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>		(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>		(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>		Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show mac address-table address** command:

```
Switch# show mac address-table address 0002.4b28.c482
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
All     0002.4b28.c482  STATIC CPU
Total Mac Addresses for this criterion: 1
```

Related Commands	Command	Description
	<a href="#">show mac address-table aging-time</a>	Displays the aging time in all VLANs or the specified VLAN.
	<a href="#">show mac address-table count</a>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<a href="#">show mac address-table dynamic</a>	Displays dynamic MAC address table entries only.
	<a href="#">show mac address-table interface</a>	Displays the MAC address table information for the specified interface.
	<a href="#">show mac address-table notification</a>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<a href="#">show mac address-table static</a>	Displays static MAC address table entries only.
	<a href="#">show mac address-table vlan</a>	Displays the MAC address table information for the specified VLAN.

# show mac address-table aging-time

Use the **show mac address-table aging-time** user EXEC command to display the aging time of a specific address table instance, all address table instances on a specified VLAN or, if a specific VLAN is not specified, on all VLANs.

```
show mac address-table aging-time [vlan vlan-id] [ | { begin | exclude | include } expression ]
```

## Syntax Description

<b>vlan</b> <i>vlan-id</i>	(Optional) Display aging time information for a specific VLAN. The range is 1 to 4094.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

If no VLAN number is specified, the aging time for all VLANs appears.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show mac address-table aging-time** command:

```
Switch> show mac address-table aging-time
Vlan    Aging Time
----    -
  1      300
```

This is an example of output from the **show mac address-table aging-time vlan 10** command:

```
Switch> show mac address-table aging-time vlan 10
Vlan    Aging Time
----    -
  10     300
```

Related Commands	Command	Description
	<a href="#">mac address-table aging-time</a>	Sets the length of time that a dynamic entry remains in the MAC address table after the entry is used or updated.
	<a href="#">show mac address-table address</a>	Displays MAC address table information for the specified MAC address.
	<a href="#">show mac address-table count</a>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<a href="#">show mac address-table dynamic</a>	Displays dynamic MAC address table entries only.
	<a href="#">show mac address-table interface</a>	Displays the MAC address table information for the specified interface.
	<a href="#">show mac address-table notification</a>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<a href="#">show mac address-table static</a>	Displays static MAC address table entries only.
	<a href="#">show mac address-table vlan</a>	Displays the MAC address table information for the specified VLAN.

# show mac address-table count

Use the **show mac address-table count** user EXEC command to display the number of addresses present in all VLANs or the specified VLAN.

```
show mac address-table count [vlan vlan-id] [ | { begin | exclude | include } expression]
```

## Syntax Description

<b>vlan</b> <i>vlan-id</i>	(Optional) Display the number of addresses for a specific VLAN. The range is 1 to 4094.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

If no VLAN number is specified, the address count for all VLANs appears.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show mac address-table count** command:

```
Switch# show mac address-table count
Mac Entries for Vlan   : 1
-----
Dynamic Address Count : 2
Static Address Count  : 0
Total Mac Addresses   : 2
```

Related Commands	Command	Description
	<b>show mac address-table address</b>	Displays MAC address table information for the specified MAC address.
	<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
	<b>show mac address-table dynamic</b>	Displays dynamic MAC address table entries only.
	<b>show mac address-table interface</b>	Displays the MAC address table information for the specified interface.
	<b>show mac address-table notification</b>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<b>show mac address-table static</b>	Displays static MAC address table entries only.
	<b>show mac address-table vlan</b>	Displays the MAC address table information for the specified VLAN.

# show mac address-table dynamic

Use the **show mac address-table dynamic** user EXEC command to display only dynamic MAC address table entries.

```
show mac address-table dynamic [address mac-address] [interface interface-id] [vlan vlan-id]
[ | { begin | exclude | include } expression]
```

## Syntax Description

<b>address</b> <i>mac-address</i>	(Optional) Specify a 48-bit MAC address; the valid format is H.H.H (available in privileged EXEC mode only).
<b>interface</b> <i>interface-id</i>	(Optional) Specify an interface to match; valid <i>interfaces</i> include physical ports and port channels.
<b>vlan</b> <i>vlan-id</i>	(Optional) Display entries for a specific VLAN; the range is 1 to 4094.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show mac address-table dynamic** command:

```
Switch> show mac address-table dynamic
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
  1     0030.b635.7862  DYNAMIC Gi0/2
  1     00b0.6496.2741  DYNAMIC Gi0/2
Total Mac Addresses for this criterion: 2
```

Related Commands	Command	Description
	<b>clear mac address-table dynamic</b>	Deletes from the MAC address table a specific dynamic address, all dynamic addresses on a particular interface, or all dynamic addresses on a particular VLAN.
	<b>show mac address-table address</b>	Displays MAC address table information for the specified MAC address.
	<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
	<b>show mac address-table count</b>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<b>show mac address-table interface</b>	Displays the MAC address table information for the specified interface.
	<b>show mac address-table static</b>	Displays static MAC address table entries only.
	<b>show mac address-table vlan</b>	Displays the MAC address table information for the specified VLAN.

# show mac address-table interface

Use the **show mac address-table interface** user command to display the MAC address table information for the specified interface in the specified VLAN.

```
show mac address-table interface interface-id [vlan vlan-id] [ | { begin | exclude | include }
expression ]
```

Syntax Description		
<i>interface-id</i>		Specify an interface type; valid interfaces include physical ports and port channels.
<b>vlan</b> <i>vlan-id</i>		(Optional) Display entries for a specific VLAN; the range is 1 to 4094.
<b>  begin</b>		(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>		(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>		(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>		Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show mac address-table interface** command:

```
Switch> show mac address-table interface gigabitethernet0/2
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       0030.b635.7862   DYNAMIC Gi0/2
1       00b0.6496.2741   DYNAMIC Gi0/2
Total Mac Addresses for this criterion: 2
```

Related Commands	Command	Description
	<b>show mac address-table address</b>	Displays MAC address table information for the specified MAC address.
	<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
	<b>show mac address-table count</b>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<b>show mac address-table dynamic</b>	Displays dynamic MAC address table entries only.
	<b>show mac address-table notification</b>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<b>show mac address-table static</b>	Displays static MAC address table entries only.
	<b>show mac address-table vlan</b>	Displays the MAC address table information for the specified VLAN.

# show mac address-table notification

Use the **show mac address-table notification** user EXEC command to display the MAC address notification settings for all interfaces or the specified interface.

```
show mac address-table notification [interface [interface-id]] [ | { begin | exclude | include }
expression]
```

Syntax Description		
<b>interface</b>	(Optional) Display information for all interfaces. Valid interfaces include physical ports and port channels.	
<i>interface-id</i>	(Optional) Display information for the specified interface. Valid interfaces include physical ports and port channels.	
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .	
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .	
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .	
<i>expression</i>	Expression in the output to use as a reference point.	

Command Modes	
User EXEC	

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Use the **show mac address-table notification** command without any keywords to display whether the feature is enabled or disabled, the MAC notification interval, the maximum number of entries allowed in the history table, and the history table contents.

Use the **interface** keyword to display the flags for all interfaces. If the *interface-id* is included, only the flags for that interface appear.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples**

This is an example of output from the **show mac address-table notification** command:

```
Switch> show mac address-table notification
MAC Notification Feature is Enabled on the switch
Interval between Notification Traps : 60 secs
Number of MAC Addresses Added : 4
Number of MAC Addresses Removed : 4
Number of Notifications sent to NMS : 3
Maximum Number of entries configured in History Table : 100
Current History Table Length : 3
MAC Notification Traps are Enabled
History Table contents
-----
History Index 0, Entry Timestamp 1032254, Despatch Timestamp 1032254
MAC Changed Message :
Operation: Added   Vlan: 2       MAC Addr: 0000.0000.0001 Module: 0   Port: 1

History Index 1, Entry Timestamp 1038254, Despatch Timestamp 1038254
MAC Changed Message :
Operation: Added   Vlan: 2       MAC Addr: 0000.0000.0000 Module: 0   Port: 1
Operation: Added   Vlan: 2       MAC Addr: 0000.0000.0002 Module: 0   Port: 1
Operation: Added   Vlan: 2       MAC Addr: 0000.0000.0003 Module: 0   Port: 1

History Index 2, Entry Timestamp 1074254, Despatch Timestamp 1074254
MAC Changed Message :
Operation: Deleted Vlan: 2       MAC Addr: 0000.0000.0000 Module: 0   Port: 1
Operation: Deleted Vlan: 2       MAC Addr: 0000.0000.0001 Module: 0   Port: 1
Operation: Deleted Vlan: 2       MAC Addr: 0000.0000.0002 Module: 0   Port: 1
Operation: Deleted Vlan: 2       MAC Addr: 0000.0000.0003 Module: 0   Port: 1
```

**Related Commands**

Command	Description
<b>clear mac address-table notification</b>	Clears the MAC address notification global counters.
<b>show mac address-table address</b>	Displays MAC address table information for the specified MAC address.
<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
<b>show mac address-table count</b>	Displays the number of addresses present in all VLANs or the specified VLAN.
<b>show mac address-table dynamic</b>	Displays dynamic MAC address table entries only.
<b>show mac address-table interface</b>	Displays the MAC address table information for the specified interface.
<b>show mac address-table static</b>	Displays static MAC address table entries only.
<b>show mac address-table vlan</b>	Displays the MAC address table information for the specified VLAN.

# show mac address-table static

Use the **show mac address-table static** user EXEC command to display only static MAC address table entries.

```
show mac address-table static [address mac-address] [interface interface-id] [vlan vlan-id]
[ | { begin | exclude | include } expression]
```

## Syntax Description

<b>address mac-address</b>	(Optional) Specify a 48-bit MAC address; the valid format is H.H.H (available in privileged EXEC mode only).
<b>interface interface-id</b>	(Optional) Specify an interface to match; valid <i>interfaces</i> include physical ports and port channels.
<b>vlan vlan-id</b>	(Optional) Display addresses for a specific VLAN. The range is 1 to 4094.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<b>expression</b>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show mac address-table static** command:

```
Switch> show mac address-table static
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
All     0100.0ccc.cccc   STATIC  CPU
All     0180.c200.0000   STATIC  CPU
All     0100.0ccc.cccd   STATIC  CPU
All     0180.c200.0001   STATIC  CPU
All     0180.c200.0004   STATIC  CPU
All     0180.c200.0005   STATIC  CPU
4       0001.0002.0004   STATIC  Drop
6       0001.0002.0007   STATIC  Drop
Total Mac Addresses for this criterion: 8
```

Related Commands	Command	Description
	<b>mac address-table static</b>	Adds static addresses to the MAC address table.
	<b>mac address-table static drop</b>	Enables unicast MAC address filtering and configures the switch to drop traffic with a specific source or destination MAC address.
	<b>show mac address-table address</b>	Displays MAC address table information for the specified MAC address.
	<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
	<b>show mac address-table count</b>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<b>show mac address-table dynamic</b>	Displays dynamic MAC address table entries only.
	<b>show mac address-table interface</b>	Displays the MAC address table information for the specified interface.
	<b>show mac address-table notification</b>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<b>show mac address-table vlan</b>	Displays the MAC address table information for the specified VLAN.

# show mac address-table vlan

Use the **show mac address-table vlan** user EXEC command to display the MAC address table information for the specified VLAN.

```
show mac address-table vlan vlan-id [ | { begin | exclude | include } expression ]
```

Syntax Description	
<i>vlan-id</i>	(Optional) Display addresses for a specific VLAN. The range is 1 to 4094.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show mac address-table vlan 1** command:

```
Switch> show mac address-table vlan 1
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       0100.0ccc.cccc  STATIC CPU
1       0180.c200.0000  STATIC CPU
1       0100.0ccc.cccd  STATIC CPU
1       0180.c200.0001  STATIC CPU
1       0180.c200.0002  STATIC CPU
1       0180.c200.0003  STATIC CPU
1       0180.c200.0005  STATIC CPU
1       0180.c200.0006  STATIC CPU
1       0180.c200.0007  STATIC CPU
Total Mac Addresses for this criterion: 9
```

Related Commands	Command	Description
	<b>show mac address-table address</b>	Displays MAC address table information for the specified MAC address.
	<b>show mac address-table aging-time</b>	Displays the aging time in all VLANs or the specified VLAN.
	<b>show mac address-table count</b>	Displays the number of addresses present in all VLANs or the specified VLAN.
	<b>show mac address-table dynamic</b>	Displays dynamic MAC address table entries only.
	<b>show mac address-table interface</b>	Displays the MAC address table information for the specified interface.
	<b>show mac address-table notification</b>	Displays the MAC address notification settings for all interfaces or the specified interface.
	<b>show mac address-table static</b>	Displays static MAC address table entries only.

# show mls qos

Use the **show mls qos** user EXEC command to display global quality of service (QoS) configuration information.

```
show mls qos [ | {begin | exclude | include} expression]
```

Syntax Description		
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .	
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .	
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .	
<i>expression</i>	Expression in the output to use as a reference point.	

Command Modes	User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

Usage Guidelines	Expressions are case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> do not appear, but the lines that contain <i>Output</i> appear.

Examples	This is an example of output from the <b>show mls qos</b> command when QoS is enabled and DSCP transparency is enabled:
	Switch> <b>show mls qos</b> QoS is enabled QoS ip packet dscp rewrite is enabled

Related Commands	Command	Description
	<a href="#">mls qos</a>	Enables QoS for the entire switch.

# show mls qos input-queue

Use the **show mls qos input-queue** user EXEC command to display quality of service (QoS) settings for the ingress queues.

```
show mls qos input-queue [ | { begin | exclude | include } expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show mls qos input-queue** command:

```
Switch> show mls qos input-queue
Queue      :      1      2
-----
buffers    :      90     10
bandwidth  :       4      4
priority   :       0     10
threshold1:     100    100
threshold2:     100    100
```

Related Commands	Command	Description
	<a href="#">mls qos srr-queue input cos-map</a>	Maps assigned class of service (CoS) values to an ingress queue and assigns CoS values to a queue and to a threshold ID.
	<a href="#">mls qos srr-queue input priority-queue</a>	Configures the ingress priority queue and guarantees bandwidth.

# show mls qos interface

Use the **show mls qos interface** user EXEC command to display quality of service (QoS) information at the port level.

```
show mls qos interface [interface-id] [buffers | queueing | statistics]
[ | {begin | exclude | include} expression]
```

## Syntax Description

<i>interface-id</i>	(Optional) Display QoS information for the specified port. Valid interfaces include physical ports.
<b>buffers</b>	(Optional) Display the buffer allocation among the queues.
<b>queueing</b>	(Optional) Display the queueing strategy (shared or shaped) and the weights corresponding to the queues.
<b>statistics</b>	(Optional) Display statistics for sent and received Differentiated Services Code Points (DSCPs) and class of service (CoS) values, the number of packets enqueued or dropped per egress queue.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.



## Note

Though visible in the command-line help string, the **policers** keyword is not supported.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show mls qos interface interface-id** command when VLAN-based QoS is enabled:

```
Switch> show mls qos interface gigabitEthernet0/1
GigabitEthernet0/1
trust state:not trusted
trust mode:not trusted
trust enabled flag:ena
COS override:dis
default COS:0
DSCP Mutation Map:Default DSCP Mutation Map
```

```
Trust device:none
qos mode:vlan-based
```

This is an example of output from the **show mls qos interface *interface-id*** command when VLAN-based QoS is disabled:

```
Switch> show mls qos interface gigabitethernet0/2
GigabitEthernet0/2
trust state:not trusted
trust mode:not trusted
trust enabled flag:ena
COS override:dis
default COS:0
DSCP Mutation Map:Default DSCP Mutation Map
Trust device:none
qos mode:port-based
```

This is an example of output from the **show mls qos interface *interface-id* buffers** command:

```
Switch> show mls qos interface gigabitethernet0/2 buffers
GigabitEthernet0/2
The port is mapped to qset : 1
The allocations between the queues are : 25 25 25 25
```

This is an example of output from the **show mls qos interface *interface-id* queueing** command. The egress expedite queue overrides the configured shaped round robin (SRR) weights.

```
Switch> show mls qos interface gigabitethernet0/2 queueing
GigabitEthernet0/2
Egress Priority Queue :enabled
Shaped queue weights (absolute) : 25 0 0 0
Shared queue weights : 25 25 25 25
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1
```

This is an example of output from the **show mls qos interface *interface-id* statistics** command. [Table 2-14](#) describes the fields in this display.

```
Switch> show mls qos interface gigabitethernet0/2 statistics
GigabitEthernet0/2

dscp: incoming
-----
 0 - 4 :      4213      0      0      0      0
 5 - 9 :         0      0      0      0      0
10 - 14 :         0      0      0      0      0
15 - 19 :         0      0      0      0      0
20 - 24 :         0      0      0      0      0
25 - 29 :         0      0      0      0      0
30 - 34 :         0      0      0      0      0
35 - 39 :         0      0      0      0      0
40 - 44 :         0      0      0      0      0
45 - 49 :         0      0      0      6      0
50 - 54 :         0      0      0      0      0
55 - 59 :         0      0      0      0      0
60 - 64 :         0      0      0      0      0
dscp: outgoing
-----
 0 - 4 :    363949      0      0      0      0
 5 - 9 :         0      0      0      0      0
10 - 14 :         0      0      0      0      0
15 - 19 :         0      0      0      0      0
```

```
show mls qos interface
```

```

20 - 24 :      0      0      0      0      0
25 - 29 :      0      0      0      0      0
30 - 34 :      0      0      0      0      0
35 - 39 :      0      0      0      0      0
40 - 44 :      0      0      0      0      0
45 - 49 :      0      0      0      0      0
50 - 54 :      0      0      0      0      0
55 - 59 :      0      0      0      0      0
60 - 64 :      0      0      0      0      0
cos: incoming
-----
0 - 4 :      132067      0      0      0      0
5 - 9 :         0      0      0
cos: outgoing
-----
0 - 4 :      739155      0      0      0      0
5 - 9 :         90      0      0

```

**Table 2-14** *show mls qos interface statistics Field Descriptions*

Field		Description
DSCP	incoming	Number of packets received for each DSCP value.
	outgoing	Number of packets sent for each DSCP value.
CoS	incoming	Number of packets received for each CoS value.
	outgoing	Number of packets sent for each CoS value.

Related Commands	Command	Description
	<a href="#">mls qos srr-queue input cos-map</a>	Maps CoS values to an ingress queue or maps CoS values to a queue and to a threshold ID.
	<a href="#">mls qos srr-queue input priority-queue</a>	Configures the ingress priority queue and guarantees bandwidth.
	<a href="#">mls qos srr-queue output cos-map</a>	Maps CoS values to an egress queue or maps CoS values to a queue and to a threshold ID.
	<a href="#">priority-queue</a>	Enables the egress expedite queue on a port.

# show mls qos maps

Use the **show mls qos maps** user EXEC command to display quality of service (QoS) mapping information. During classification, QoS uses the mapping tables to represent the priority of the traffic and to derive a corresponding class of service (CoS) value from the received CoS or IP precedence value.

```
show mls qos maps [ cos-input-q | cos-output-q | ip-prec-dscp ] [ | {begin | exclude | include}
expression]
```

Syntax Description		
<b>cos-input-q</b>	(Optional)	Display the CoS input queue threshold map.
<b>cos-output-q</b>	(Optional)	Display the CoS output queue threshold map.
<b>  begin</b>	(Optional)	Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional)	Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional)	Display includes lines that match the specified <i>expression</i> .
<i>expression</i>		Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

The CoS input queue threshold and the CoS output queue threshold maps show the CoS value in the top row and the corresponding queue ID and threshold ID in the second row. For example, in the CoS input queue threshold map, a CoS value of 5 corresponds to queue 2 and threshold 1 (2-1).

**Examples** This is an example of output from the **show mls qos maps** command:

```
Switch> show mls qos maps

Cos-outputq-threshold map:
  cos:  0   1   2   3   4   5   6   7
  -----
queue-threshold: 2-1 2-1 3-1 3-1 4-1 1-1 4-1 4-1

Cos-inputq-threshold map:
  cos:  0   1   2   3   4   5   6   7
  -----
queue-threshold: 1-1 1-1 1-1 1-1 1-1 2-1 1-1 1-1
```

■ show mls qos maps

Related Commands	Command	Description
	<a href="#">mls qos srr-queue input cos-map</a>	Maps CoS values to an ingress queue or maps CoS values to a queue and to a threshold ID.
	<a href="#">mls qos srr-queue output cos-map</a>	Maps CoS values to an egress queue or maps CoS values to a queue and to a threshold ID.

# show monitor

Use the **show monitor** user EXEC command to display information about all Switched Port Analyzer (SPAN) and Remote SPAN (RSPAN) sessions on the switch. Use the command with keywords to show a specific session, all sessions, all local sessions, or all remote sessions.

```
show monitor [session {session_number | all | local | range list | remote} [detail]] [ | {begin |
exclude | include} expression]
```

Syntax Description	
<b>session</b>	(Optional) Display information about specified SPAN sessions.
<b>session_number</b>	Specify the number of the SPAN or RSPAN session. The range is 1 to 66.
<b>all</b>	Display all SPAN sessions.
<b>local</b>	Display only local SPAN sessions.
<b>range list</b>	Display a range of SPAN sessions, where <i>list</i> is the range of valid sessions, either a single session or a range of sessions described by two numbers, the lower one first, separated by a hyphen. Do not enter any spaces between comma-separated parameters or in hyphen-specified ranges.  <b>Note</b> This keyword is available only in privileged EXEC mode.
<b>remote</b>	Display only remote SPAN sessions.
<b>detail</b>	(Optional) Display detailed information about the specified sessions.
<b>  begin</b>	Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	Display excludes lines that match the <i>expression</i> .
<b>  include</b>	Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

The output is the same for the **show monitor** command and the **show monitor session all** command.

**Examples**

This is an example of output for the **show monitor** user EXEC command:

```
Switch# show monitor
Session 1
-----
Type : Local Session
Source Ports :
RX Only : Gi0/1
Both : Gi0/2-3,Gi0/5-6
Destination Ports : Gi0/20
Encapsulation : Replicate
Ingress : Disabled
```

```
Session 2
-----
Type : Remote Source Session
Source VLANs :
TX Only : 10
Both : 1-9
Dest RSPAN VLAN : 105
```

This is an example of output for the **show monitor** user EXEC command for local SPAN source session 1:

```
Switch# show monitor session 1
Session 1
-----
Type : Local Session
Source Ports :
RX Only : Gi0/1
Both : Gi0/2-3,Gi0/5-6
Destination Ports : Gi0/20
Encapsulation : Replicate
Ingress : Disabled
```

This is an example of output for the **show monitor session all** user EXEC command when ingress traffic forwarding is enabled:

```
Switch# show monitor session all
Session 1
-----
Type : Local Session
Source Ports :
Both : Gi0/2
Destination Ports : Gi0/3
Encapsulation : Native
Ingress : Enabled, default VLAN = 5
Ingress encap : DOT1Q

Session 2
-----
Type : Local Session
Source Ports :
Both : Gi0/8
Destination Ports : Gi0/12
Encapsulation : Replicate
Ingress : Enabled, default VLAN = 4
Ingress encap : Untagged
```

**Related Commands**

Command	Description
<a href="#">monitor session</a>	Starts or modifies a SPAN or RSPAN session.

# show pagp

Use the **show pagp** user EXEC command to display Port Aggregation Protocol (PAgP) channel-group information.

```
show pagp [channel-group-number] {counters | internal | neighbor} [| {begin | exclude | include} expression]
```

Syntax Description	
<i>channel-group-number</i>	(Optional) Number of the channel group. The range is 1 to 6.
<b>counters</b>	Display traffic information.
<b>internal</b>	Display internal information.
<b>neighbor</b>	Display neighbor information.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** You can enter any **show pagp** command to display the active channel-group information. To display the nonactive information, enter the **show pagp** command with a channel-group number.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* are appear.

**Examples** This is an example of output from the **show pagp 1 counters** command:

```
Switch> show pagp 1 counters
          Information          Flush
Port      Sent  Recv      Sent  Recv
-----
Channel group: 1
  Gi0/1    45   42         0     0
  Gi0/2    45   41         0     0
```

This is an example of output from the **show pagp 1 internal** command:

```
Switch> show pagp 1 internal
Flags: S - Device is sending Slow hello. C - Device is in Consistent state.
      A - Device is in Auto mode.
Timers: H - Hello timer is running.      Q - Quit timer is running.
      S - Switching timer is running.    I - Interface timer is running.
```

Channel group 1

Port	Flags	State	Timers	Hello Interval	Partner Count	PAGP Priority	Learning Method	Group Ifindex
Gi0/1	SC	U6/S7	H	30s	1	128	Any	16
Gi0/2	SC	U6/S7	H	30s	1	128	Any	16

This is an example of output from the **show pagp 1 neighbor** command:

```
Switch> show pagp 1 neighbor
Flags: S - Device is sending Slow hello. C - Device is in Consistent state.
      A - Device is in Auto mode.      P - Device learns on physical port.
```

Channel group 1 neighbors

Port	Partner Name	Partner Device ID	Partner Port	Age	Flags	Partner Group Cap.
Gi0/1	switch-p2	0002.4b29.4600	Gi0/1	9s	SC	10001
Gi0/2	switch-p2	0002.4b29.4600	Gi0/2	24s	SC	10001

#### Related Commands

Command	Description
<a href="#">clear pagp</a>	Clears PAGP channel-group information.

# show parser macro

Use the **show parser macro** user EXEC command to display the parameters for all configured macros or for one macro on the switch.

```
show parser macro [{brief | description [interface interface-id] | name macro-name}] [ | {begin
| exclude | include} expression]
```

Syntax Description		
<b>brief</b>	(Optional) Display the name of each macro.	
<b>description [interface <i>interface-id</i>]</b>	(Optional) Display all macro descriptions or the description of a specific interface.	
<b>name <i>macro-name</i></b>	(Optional) Display information about a single macro identified by the macro name.	
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .	
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .	
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .	
<b><i>expression</i></b>	Expression in the output to use as a reference point.	

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is a partial output example from the **show parser macro** command. The output for the Cisco-default macros varies depending on the switch platform and the software image running on the switch:

```
Switch# show parser macro
Total number of macros = 6
-----
Macro name : cisco-global
Macro type : default global
# Enable dynamic port error recovery for link state
# failures
errdisable recovery cause link-flap
errdisable recovery interval 60

<output truncated>

-----
Macro name : cisco-desktop
Macro type : default interface
# macro keywords $AVID
# Basic interface - Enable data VLAN only
```

```
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access
```

<output truncated>

```
-----
Macro name : cisco-phone
Macro type : default interface
# Cisco IP phone + desktop template
# macro keywords $AVID $VVID
# VoIP enabled interface - Enable data VLAN
# and voice VLAN (VVID)
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access
```

<output truncated>

```
-----
Macro name : cisco-switch
Macro type : default interface
# macro keywords $NVID
# Access Uplink to Distribution
# Do not apply to EtherChannel/Port Group
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
switchport trunk native vlan $NVID
```

<output truncated>

```
-----
Macro name : cisco-router
Macro type : default interface
# macro keywords $NVID
# Access Uplink to Distribution
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
switchport trunk native vlan $NVID
```

<output truncated>

```
-----
Macro name : snmp
Macro type : customizable

#enable port security, linkup, and linkdown traps
snmp-server enable traps port-security
snmp-server enable traps linkup
snmp-server enable traps linkdown
#set snmp-server host
snmp-server host ADDRESS
#set SNMP trap notifications precedence
snmp-server ip precedence VALUE

-----
```

This is an example of output from the **show parser macro name** command:

```
Switch# show parser macro name standard-switch10
Macro name : standard-switch10
Macro type : customizable
macro description standard-switch10
# Trust QoS settings on VOIP packets
auto qos voip trust
# Allow port channels to be automatically formed
channel-protocol pagp
```

This is an example of output from the **show parser macro brief** command:

```
Switch# show parser macro brief
default global : cisco-global
default interface: cisco-desktop
default interface: cisco-phone
default interface: cisco-switch
default interface: cisco-router
customizable : snmp
```

This is an example of output from the **show parser macro description** command:

```
Switch# show parser macro description
Global Macro(s): cisco-global
Interface Macro Description(s)
-----
Gi0/1 standard-switch10
Gi0/2 this is test macro
-----
```

This is an example of output from the **show parser macro description interface** command:

```
Switch# show parser macro description interface gigabitethernet0/2
Interface Macro Description
-----
Gi0/2 this is test macro
-----
```

## Related Commands

Command	Description
<a href="#">macro apply</a>	Applies a macro on an interface or applies and traces a macro on an interface.
<a href="#">macro description</a>	Adds a description about the macros that are applied to an interface.
<a href="#">macro global</a>	Applies a macro on a switch or applies and traces a macro on a switch.
<a href="#">macro global description</a>	Adds a description about the macros that are applied to the switch.
<a href="#">macro name</a>	Creates a macro.
<a href="#">show running-config</a>	Displays the current operating configuration, including defined macros. For syntax information, select <b>Cisco IOS Configuration Fundamentals Command Reference, Release 12.2 &gt; File Management Commands &gt; Configuration File Management Commands</b> .

# show port-security

Use the **show port-security** privileged EXEC command to display port-security settings for an interface or for the switch.

```
show port-security [interface interface-id] [address | vlan] [ | {begin | exclude | include}
expression]
```

## Syntax Description

<b>interface</b> <i>interface-id</i>	(Optional) Display port security settings for the specified interface. Valid interfaces include physical ports (including type, module, and port number).
<b>address</b>	(Optional) Display all secure MAC addresses on all ports or a specified port.
<b>vlan</b>	(Optional) Display port security settings for all VLANs on the specified interface. This keyword is visible only on interfaces that have the switchport mode set to <b>trunk</b> .
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

If you enter the command without keywords, the output includes the administrative and operational status of all secure ports on the switch.

If you enter an *interface-id*, the command displays port security settings for the interface.

If you enter the **address** keyword, the command displays the secure MAC addresses for all interfaces and the aging information for each secure address.

If you enter an *interface-id* and the **address** keyword, the command displays all the MAC addresses for the interface with aging information for each secure address. You can also use this command to display all the MAC addresses for an interface even if you have not enabled port security on it.

If you enter the **vlan** keyword, the command displays the configured maximum and the current number of secure MAC addresses for all VLANs on the interface. This option is visible only on interfaces that have the switchport mode set to **trunk**.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples**

This is an example of the output from the **show port-security** command:

```
Switch# show port-security
Secure Port      MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action
              (Count)          (Count)      (Count)
-----
      Gi0/1          1              0              0              Shutdown
-----
Total Addresses in System (excluding one mac per port) : 1
Max Addresses limit in System (excluding one mac per port) : 6272
```

This is an example of output from the **show port-security interface interface-id** command:

```
Switch# show port-security interface gigabitethernet0/1
Port Security : Enabled
Port status : SecureUp
Violation mode : Shutdown
Maximum MAC Addresses : 1
Total MAC Addresses : 0
Configured MAC Addresses : 0
Aging time : 0 mins
Aging type : Absolute
SecureStatic address aging : Disabled
Security Violation count : 0
```

This is an example of output from the **show port-security address** command:

```
Switch# show port-security address
Secure Mac Address Table
-----
Vlan    Mac Address      Type                Ports    Remaining Age
        (mins)
-----
      1    0006.0700.0800  SecureConfigured   Gi0/2    1
-----
Total Addresses in System (excluding one mac per port) : 1
Max Addresses limit in System (excluding one mac per port) : 6272
```

This is an example of output from the **show port-security interface gigabitethernet0/2 address** command:

```
Switch# show port-security interface gigabitethernet0/2 address
Secure Mac Address Table
-----
Vlan    Mac Address      Type                Ports    Remaining Age
        (mins)
-----
      1    0006.0700.0800  SecureConfigured   Gi0/2    1
-----
Total Addresses: 1
```

This is an example of output from the **show port-security interface interface-id vlan** command:

```
Switch# show port-security interface gigabitethernet0/2 vlan
Default maximum: not set, using 5120
VLAN Maximum Current
   5 default      1
  10 default     54
  11 default    101
  12 default    101
  13 default    201
  14 default    501
```

■ show port-security

Related Commands	Command	Description
	<a href="#">clear port-security</a>	Deletes from the MAC address table a specific type of secure address or all the secure addresses on the switch or an interface.
	<a href="#">switchport port-security</a>	Enables port security on a port, restricts the use of the port to a user-defined group of stations, and configures secure MAC addresses.

# show sdm prefer

Use the **show sdm prefer** privileged EXEC command to display information about the Switch Database Management (SDM) templates that can be used to maximize used for allocating system resources for a particular feature.

```
show sdm prefer [default | qos] [ | {begin | exclude | include} expression]
```

Syntax Description		
<b>default</b>	(Optional) Display the template that balances system resources among features.	
<b>qos</b>	(Optional) Display the template that maximizes system resources for quality of service (QoS) access control entries (ACEs).	
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .	
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .	
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .	
<i>expression</i>	Expression in the output to use as a reference point.	

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** When you change the SDM template by using the **sdm prefer** global configuration command, you must reload the switch for the configuration to take effect. If you enter the **show sdm prefer** command before you enter the **reload** privileged EXEC command, the **show sdm prefer** command shows the template currently in use and the template that will become active after a reload.

The numbers displayed for each template represent an approximate maximum number for each feature resource. The actual number might vary, depending on the actual number of other features configured.

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show sdm prefer** command:

```
Switch# show sdm prefer default
"default" template:
The selected template optimizes the resources in
the switch to support this level of features for
0 routed interfaces and 255 VLANs.

number of unicast mac addresses:          8K
number of IPv4 IGMP groups:              256
number of IPv4/MAC qos aces:             128
number of IPv4/MAC security aces:        384
```

This is an example of output from the **show sdm prefer qos** command:

```
Switch# show sdm prefer qos
"qos" template:
The selected template optimizes the resources in
the switch to support this level of features for
0 routed interfaces and 255 VLANs.

number of unicast mac addresses:           8K
number of IPv4 IGMP groups:               256
number of IPv4/MAC qos aces:              384
number of IPv4/MAC security aces:         128
```

#### Related Commands

Command	Description
<a href="#">sdm prefer</a>	Sets the SDM template to maximize resources.

# show setup express

Use the **show setup express** privileged EXEC command to display if Express Setup mode is active on the switch.

```
show setup express [ | {begin | exclude | include} expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Defaults** No default is defined.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Examples** This is an example of output from the **show setup express** command:

```
Switch# show setup express
express setup mode is active
```

Related Commands	Command	Description
	<a href="#">setup express</a>	Enables Express Setup mode.

# show spanning-tree

Use the **show spanning-tree** user EXEC command to display spanning-tree state information.

```
show spanning-tree [bridge-group | active [detail] | backbonefast | blockedports | bridge | detail
[active] | inconsistentports | interface interface-id | mst | pathcost method | root | summary
[totals] | uplinkfast | vlan vlan-id] [ | {begin | exclude | include} expression]
```

```
show spanning-tree bridge-group [active [detail] | blockedports | bridge | detail [active] |
inconsistentports | interface interface-id | root | summary] [ | {begin | exclude | include}
expression]
```

```
show spanning-tree vlan vlan-id [active [detail] | blockedports | bridge | detail [active] |
inconsistentports | interface interface-id | root | summary] [ | {begin | exclude | include}
expression]
```

```
show spanning-tree {vlan vlan-id | bridge-group} bridge [address | detail | forward-time |
hello-time | id | max-age | priority [system-id] | protocol] [ | {begin | exclude | include}
expression]
```

```
show spanning-tree {vlan vlan-id | bridge-group} root [address | cost | detail | forward-time |
hello-time | id | max-age | port | priority [system-id] [ | {begin | exclude | include}
expression]
```

```
show spanning-tree interface interface-id [active [detail] | cost | detail [active] | inconsistency |
portfast | priority | rootcost | state] [ | {begin | exclude | include} expression]
```

```
show spanning-tree mst [configuration [digest]] | [instance-id [detail | interface interface-id
[detail]]] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>bridge-group</i>	(Optional) Specify the bridge group number. The range is 1 to 255.
<b>active</b> [ <b>detail</b> ]	(Optional) Display spanning-tree information only on active interfaces (available only in privileged EXEC mode).
<b>backbonefast</b>	(Optional) Display spanning-tree BackboneFast status.
<b>blockedports</b>	(Optional) Display blocked port information (available only in privileged EXEC mode).
<b>bridge</b> [ <b>address</b>   <b>detail</b>   <b>forward-time</b>   <b>hello-time</b>   <b>id</b>   <b>max-age</b>   <b>priority</b> [ <b>system-id</b> ]   <b>protocol</b> ]	(Optional) Display status and configuration of this switch (optional keywords available only in privileged EXEC mode).
<b>detail</b> [ <b>active</b> ]	(Optional) Display a detailed summary of interface information ( <b>active</b> keyword available only in privileged EXEC mode).
<b>inconsistentports</b>	(Optional) Display inconsistent port information (available only in privileged EXEC mode).
<b>interface</b> <i>interface-id</i> [ <b>active</b> [ <b>detail</b> ]   <b>cost</b>   <b>detail</b> [ <b>active</b> ]   <b>inconsistency</b>   <b>portfast</b>   <b>priority</b>   <b>rootcost</b>   <b>state</b> ]	(Optional) Display spanning-tree information for the specified interface (all options except <b>portfast</b> and <b>state</b> available only in privileged EXEC mode). Enter each interface separated by a space. Ranges are not supported. Valid interfaces include physical ports, VLANs, and port channels. The VLAN range is 1 to 4094. The port-channel range is 1 to 6.

<b>mst</b> [ <b>configuration</b> [ <b>digest</b> ]] [ <i>instance-id</i> [ <b>detail</b>   <b>interface</b> <i>interface-id</i> [ <b>detail</b> ]]]	<p>(Optional) Display the multiple spanning-tree (MST) region configuration and status (available only in privileged EXEC mode).</p> <p>The keywords have these meanings:</p> <ul style="list-style-type: none"> <li>• <b>digest</b>—(Optional) Display the MD5 digest included in the current MST configuration identifier (MSTCI). Two separate digests, one for standard and one for prestandard switches, appear (available only in privileged EXEC mode).</li> </ul> <p>The terminology was updated for the implementation of the IEEE standard, and the <i>txholdcount</i> field was added.</p> <p>The new master role appears for boundary ports.</p> <p>The word <i>pre-standard</i> or <i>Pre-STD</i> appears when an IEEE standard bridge sends prestandard BPDUs on a port.</p> <p>The word <i>pre-standard (config)</i> or <i>Pre-STD-Cf</i> appears when a port has been configured to transmit prestandard BPDUs and no prestandard BPDU has been received on that port.</p> <p>The word <i>pre-standard (rcvd)</i> or <i>Pre-STD-Rx</i> appears when a prestandard BPDU has been received on a port that has not been configured to transmit prestandard BPDUs.</p> <p>A <i>dispute</i> flag appears when a designated port receives inferior designated information until the port returns to the forwarding state or ceases to be designated.</p> <ul style="list-style-type: none"> <li>• <i>instance-id</i>—You can specify a single instance ID, a range of IDs separated by a hyphen, or a series of IDs separated by a comma. The range is 1 to 4094. The display shows the number of currently configured instances.</li> <li>• <b>interface</b> <i>interface-id</i>—(Optional) Valid interfaces include physical ports, VLANs, and port channels. The VLAN range is 1 to 4094. The port-channel range is 1 to 6.</li> <li>• <b>detail</b>—(Optional) Display detailed information for the instance or interface.</li> </ul>
<b>pathcost method</b>	(Optional) Display the default path cost method (available only in privileged EXEC mode).
<b>root</b> [ <b>address</b>   <b>cost</b>   <b>detail</b>   <b>forward-time</b>   <b>hello-time</b>   <b>id</b>   <b>max-age</b>   <b>port</b>   <b>priority</b> [ <b>system-id</b> ]]	(Optional) Display root switch status and configuration (all keywords available only in privileged EXEC mode).
<b>summary</b> [ <b>totals</b> ]	(Optional) Display a summary of port states or the total lines of the spanning-tree state section. The words <i>IEEE Standard</i> identify the MST version running on a switch.
<b>uplinkfast</b>	(Optional) Display spanning-tree UplinkFast status.
<b>vlan</b> <i>vlan-id</i> [ <b>active</b> [ <b>detail</b> ]   <b>backbonefast</b>   <b>blockedports</b>   <b>bridge</b> [ <b>address</b>   <b>detail</b>   <b>forward-time</b>   <b>hello-time</b>   <b>id</b>   <b>max-age</b>   <b>priority</b> [ <b>system-id</b> ]   <b>protocol</b> ]	(Optional) Display spanning-tree information for the specified VLAN (some keywords available only in privileged EXEC mode). You can specify a single VLAN identified by VLAN ID number, a range of VLANs separated by a hyphen, or a series of VLANs separated by a comma. The range is 1 to 4094.

<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Release	Modification
12.2(37)EY	This command was introduced.

**Usage Guidelines** If the *vlan-id* variable is omitted, the command applies to the spanning-tree instance for all VLANs. Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show spanning-tree active** command:

```
Switch# show spanning-tree active
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32768
            Address    0001.42e2.cdd0
            Cost      3038
            Port      24 (GigabitEthernet0/1)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    49153 (priority 49152 sys-id-ext 1)
            Address    0003.fd63.9580
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300
  Uplinkfast enabled

Interface          Role Sts Cost          Prio.Nbr Type
-----
Gi0/1              Root FWD 3019         128.24  P2p
<output truncated>
```

This is an example of output from the **show spanning-tree detail** command:

```
Switch# show spanning-tree detail
VLAN0001 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 49152, sysid 1, address 0003.fd63.9580
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 32768, address 0001.42e2.cdd0
  Root port is 1 (GigabitEthernet0/1), cost of root path is 3038
  Topology change flag not set, detected flag not set
  Number of topology changes 0 last change occurred 1d16h ago
  Times: hold 1, topology change 35, notification 2
         hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300
  Uplinkfast enabled
```

```

Port 1 (GigabitEthernet0/1) of VLAN0001 is forwarding
  Port path cost 3019, Port priority 128, Port Identifier 128.24.
  Designated root has priority 32768, address 0001.42e2.cdd0
  Designated bridge has priority 32768, address 00d0.bbf5.c680
  Designated port id is 128.25, designated path cost 19
  Timers: message age 2, forward delay 0, hold 0
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default
  BPDU: sent 0, received 72364
<output truncated>

```

This is an example of output from the **show spanning-tree interface *interface-id*** command:

```

Switch# show spanning-tree interface gigabitethernet0/1
Vlan          Role Sts Cost      Prio.Nbr Type
-----
VLAN0001      Root FWD 3019      128.24  P2p

Switch# show spanning-tree summary
Switch is in pvst mode
Root bridge for: none
EtherChannel misconfiguration guard is enabled
Extended system ID is enabled
Portfast is disabled by default
PortFast BPDU Guard is disabled by default
Portfast BPDU Filter is disabled by default
Loopguard is disabled by default
UplinkFast is enabled
BackboneFast is enabled
Pathcost method used is short

Name          Blocking Listening Learning Forwarding STP Active
-----
VLAN0001      1          0          0          11         12
VLAN0002      3          0          0          1          4
VLAN0004      3          0          0          1          4
VLAN0006      3          0          0          1          4
VLAN0031      3          0          0          1          4
VLAN0032      3          0          0          1          4
<output truncated>
-----
37 vlans          109         0          0          47         156
Station update rate set to 150 packets/sec.

UplinkFast statistics
-----
Number of transitions via uplinkFast (all VLANs) : 0
Number of proxy multicast addresses transmitted (all VLANs) : 0

BackboneFast statistics
-----
Number of transition via backboneFast (all VLANs) : 0
Number of inferior BPDUs received (all VLANs) : 0
Number of RLQ request PDUs received (all VLANs) : 0
Number of RLQ response PDUs received (all VLANs) : 0
Number of RLQ request PDUs sent (all VLANs) : 0
Number of RLQ response PDUs sent (all VLANs) : 0

```

This is an example of output from the **show spanning-tree mst configuration** command:

```
Switch# show spanning-tree mst configuration
Name      [region1]
Revision  1
Instance  Vlans Mapped
-----
0         1-9,21-4094
1         10-20
-----
```

This is an example of output from the **show spanning-tree mst interface interface-id** command:

```
Switch# show spanning-tree mst interface gigabitEthernet0/1
GigabitEthernet0/1 of MST00 is root forwarding
Edge port: no          (default)      port guard : none          (default)
Link type: point-to-point (auto)      bpdu filter: disable      (default)
Boundary : boundary   (STP)          bpdu guard : disable      (default)
Bpdus sent 5, received 74

Instance role state cost      prio vlans mapped
0        root FWD  200000  128  1,12,14-4094
```

This is an example of output from the **show spanning-tree mst 0** command:

```
Switch# show spanning-tree mst 0
##### MST00          vlans mapped: 1-9,21-4094
Bridge      address 0002.4b29.7a00 priority 32768 (32768 sysid 0)
Root        address 0001.4297.e000 priority 32768 (32768 sysid 0)
            port    Gi0/1          path cost 200038

IST master *this switch
Operational hello time 2, forward delay 15, max age 20, max hops 20
Configured hello time 2, forward delay 15, max age 20, max hops 20

Interface          role state cost      prio type
-----
GigabitEthernet0/1 root FWD  200000  128  P2P bound(STP)
GigabitEthernet0/2 desg FWD  200000  128  P2P bound(STP)
Port-channell     desg FWD  200000  128  P2P bound(STP)
```

## Related Commands

Command	Description
<a href="#">clear spanning-tree counters</a>	Clears the spanning-tree counters.
<a href="#">clear spanning-tree detected-protocols</a>	Restarts the protocol migration process.
<a href="#">spanning-tree backbonefast</a>	Enables the BackboneFast feature.
<a href="#">spanning-tree bpdupfilter</a>	Prevents an interface from sending or receiving bridge protocol data units (BPDUs).
<a href="#">spanning-tree bpduguard</a>	Puts an interface in the error-disabled state when it receives a BPDU.
<a href="#">spanning-tree cost</a>	Sets the path cost for spanning-tree calculations.
<a href="#">spanning-tree extend system-id</a>	Enables the extended system ID feature.
<a href="#">spanning-tree guard</a>	Enables the root guard or the loop guard feature for all the VLANs associated with the selected interface.
<a href="#">spanning-tree link-type</a>	Overrides the default link-type setting for rapid spanning-tree transitions to the forwarding state.

Command	Description
<b>spanning-tree loopguard default</b>	Prevents alternate or root ports from becoming the designated port because of a failure that leads to a unidirectional link.
<b>spanning-tree mst configuration</b>	Enters multiple spanning-tree (MST) configuration mode through which the MST region configuration occurs.
<b>spanning-tree mst cost</b>	Sets the path cost for MST calculations.
<b>spanning-tree mst forward-time</b>	Sets the forward-delay time for all MST instances.
<b>spanning-tree mst hello-time</b>	Sets the interval between hello BPDUs sent by root switch configuration messages.
<b>spanning-tree mst max-age</b>	Sets the interval between messages that the spanning tree receives from the root switch.
<b>spanning-tree mst max-hops</b>	Sets the number of hops in an MST region before the BPDU is discarded and the information held for an interface is aged.
<b>spanning-tree mst port-priority</b>	Configures an interface priority.
<b>spanning-tree mst priority</b>	Configures the switch priority for the specified spanning-tree instance.
<b>spanning-tree mst root</b>	Configures the MST root switch priority and timers based on the network diameter.
<b>spanning-tree port-priority</b>	Configures an interface priority.
<b>spanning-tree portfast (global configuration)</b>	Globally enables the BPDU filtering or the BPDU guard feature on Port Fast-enabled interfaces or enables the Port Fast feature on all nontrunking interfaces.
<b>spanning-tree portfast (interface configuration)</b>	Enables the Port Fast feature on an interface and all its associated VLANs.
<b>spanning-tree uplinkfast</b>	Accelerates the choice of a new root port when a link or switch fails or when the spanning tree reconfigures itself.
<b>spanning-tree vlan</b>	Configures spanning tree on a per-VLAN basis.

# show storm-control

Use the **show storm-control** user EXEC command to display broadcast, multicast, or unicast storm control settings on the switch or on the specified interface or to display storm-control history.

```
show storm-control [interface-id] [broadcast | multicast | unicast] [ | { begin | exclude | include }
expression]
```

## Syntax Description

<i>interface-id</i>	(Optional) Interface ID for the physical port (including type, module, and port number).
<b>broadcast</b>	(Optional) Display broadcast storm threshold setting.
<b>multicast</b>	(Optional) Display multicast storm threshold setting.
<b>unicast</b>	(Optional) Display unicast storm threshold setting.
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

When you enter an *interface-id*, the storm control thresholds appear for the specified interface.

If you do not enter an *interface-id*, settings appear for one traffic type for all ports on the switch.

If you do not enter a traffic type, settings appear for broadcast storm control.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of a partial output from the **show storm-control** command when no keywords are entered. Because no traffic-type keyword was entered, the broadcast storm control settings appear.

```
Switch> show storm-control
Interface  Filter State  Upper      Lower      Current
-----  -
Gi0/1     Forwarding   20 pps     10 pps     5 pps
Gi0/2     Forwarding   50.00%    40.00%    0.00%
<output truncated>
```

This is an example of output from the **show storm-control** command for a specified interface. Because no traffic-type keyword was entered, the broadcast storm control settings appear.

```
Switch> show storm-control gigabitethernet 0/1
Interface  Filter State  Upper      Lower      Current
-----
Gi0/1     Forwarding    20 pps    10 pps    5 pps
```

Table 2-15 describes the fields in the **show storm-control** display.

**Table 2-15** *show storm-control Field Descriptions*

Field	Description
Interface	Displays the ID of the interface.
Filter State	Displays the status of the filter: <ul style="list-style-type: none"> <li>Blocking—Storm control is enabled, and a storm has occurred.</li> <li>Forwarding—Storm control is enabled, and no storms have occurred.</li> <li>Inactive—Storm control is disabled.</li> </ul>
Upper	Displays the rising suppression level as a percentage of total available bandwidth in packets per second or in bits per second.
Lower	Displays the falling suppression level as a percentage of total available bandwidth in packets per second or in bits per second.
Current	Displays the bandwidth usage of broadcast traffic or the specified traffic type (broadcast, multicast, or unicast) as a percentage of total available bandwidth. This field is only valid when storm control is enabled.

#### Related Commands

Command	Description
<a href="#">storm-control</a>	Sets the broadcast, multicast, or unicast storm control levels for the switch.

# show system mtu

Use the **show system mtu** privileged EXEC command to display the global maximum transmission unit (MTU) or maximum packet size set for the switch.

```
show system mtu [ | { begin | exclude | include } expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines**

If you have used the **system mtu** or **system mtu jumbo** global configuration command to change the MTU setting, the new setting does not take effect until you reset the switch.

The system MTU refers to ports operating at 10/100 Mb/s; the system jumbo MTU refers to Gigabit ports; the system routing MTU refers to routed ports.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show system mtu** command:

```
Switch# show system mtu
System MTU size is 1500 bytes
System Jumbo MTU size is 1550 bytes
```

Related Commands	Command	Description
	<a href="#">system mtu</a>	Sets the MTU size for the Fast Ethernet, Gigabit Ethernet, or routed ports.

# show udld

Use the **show udld** user EXEC command to display UniDirectional Link Detection (UDLD) administrative and operational status for all ports or the specified port.

```
show udld [interface-id] [ | { begin | exclude | include } expression]
```

Syntax Description		
<i>interface-id</i>	(Optional) ID of the interface and port number. Valid interfaces include physical ports and VLANs. The VLAN range is 1 to 4094.	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .	
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .	
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .	
<i>expression</i>	Expression in the output to use as a reference point.	

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** If you do not enter an *interface-id*, administrative and operational UDLD status for all interfaces appear. Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show udld interface-id** command. For this display, UDLD is enabled on both ends of the link, and UDLD detects that the link is bidirectional. [Table 2-16](#) describes the fields in this display.

```
Switch> show udld gigabitethernet0/1
Interface gi0/1
---
Port enable administrative configuration setting: Follows device default
Port enable operational state: Enabled
Current bidirectional state: Bidirectional
Current operational state: Advertisement - Single Neighbor detected
Message interval: 60
Time out interval: 5
  Entry 1
    Expiration time: 146
    Device ID: 1
    Current neighbor state: Bidirectional
    Device name: Switch-A
    Port ID: Gi0/1
    Neighbor echo 1 device: Switch-B
    Neighbor echo 1 port: Gi0/2
    Message interval: 5
    CDP Device name: Switch-A
```

**Table 2-16** *show udd Field Descriptions*

<b>Field</b>	<b>Description</b>
Interface	The interface on the local device configured for UDLD.
Port enable administrative configuration setting	How UDLD is configured on the port. If UDLD is enabled or disabled, the port enable configuration setting is the same as the operational enable state. Otherwise, the enable operational setting depends on the global enable setting.
Port enable operational state	Operational state that shows whether UDLD is actually running on this port.
Current bidirectional state	The bidirectional state of the link. An unknown state appears if the link is down or if it is connected to an UDLD-incapable device. A bidirectional state appears if the link is a normal two-way connection to a UDLD-capable device. All other values mean miswiring.
Current operational state	The current phase of the UDLD state machine. For a normal bidirectional link, the state machine is most often in the Advertisement phase.
Message interval	How often advertisement messages are sent from the local device. Measured in seconds.
Time out interval	The time period, in seconds, that UDLD waits for echoes from a neighbor device during the detection window.
Entry 1	Information from the first cache entry, which contains a copy of echo information received from the neighbor.
Expiration time	The amount of time in seconds remaining before this cache entry is aged out.
Device ID	The neighbor device identification.
Current neighbor state	The neighbor's current state. If both the local and neighbor devices are running UDLD normally, the neighbor state and local state should be bidirectional. If the link is down or the neighbor is not UDLD-capable, no cache entries appear.
Device name	The device name or the system serial number of the neighbor. The system serial number appears if the device name is not set or is set to the default (Switch).
Port ID	The neighbor port ID enabled for UDLD.
Neighbor echo 1 device	The device name of the neighbors' neighbor from which the echo originated.
Neighbor echo 1 port	The port number ID of the neighbor from which the echo originated.
Message interval	The rate, in seconds, at which the neighbor is sending advertisement messages.
CDP device name	The CDP device name or the system serial number. The system serial number appears if the device name is not set or is set to the default (Switch).

Related Commands	Command	Description
	<b>uddl</b>	Enables aggressive or normal mode in UDLD or sets the configurable message timer time.
	<b>uddl port</b>	Enables UDLD on an individual interface or prevents a fiber-optic interface from being enabled by the <b>uddl</b> global configuration command.
	<b>uddl reset</b>	Resets all interfaces shutdown by UDLD and permits traffic to begin passing through them again.

# show version

Use the **show version** user EXEC command to display version information for the hardware and firmware.

```
show version [ | { begin | exclude | include } expression]
```

Syntax Description	
<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show version** command:



**Note**

Though visible in the **show version** output, the *configuration register* information is not supported on the switch.

```
Switch> show version
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(0.0.16)FX, CISCO
DEVELOPMENT TEST VERSION
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Tue 17-May-05 01:43 by yenanh
```

```
ROM: Bootstrap program is C2960 boot loader
BOOTLDR: C2960 Boot Loader (C2960-HBOOT-M), Version 12.2 [lqian-flo_pilsner 100]
```

```
Switch uptime is 3 days, 20 hours, 8 minutes
System returned to ROM by power-on
System image file is "flash:c2960-lanbase-mz.122-0.0.16.FX.bin"
```

```
cisco WS-C2960-24TC-L (PowerPC405) processor with 61440K/4088K bytes of memory.
Processor board ID FHH0916001J
Last reset from power-on
Target IOS Version 12.2(37)EY
1 Virtual Ethernet interface
24 FastEthernet interfaces
2 Gigabit Ethernet interfaces
The password-recovery mechanism is enabled.
```

```
64K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address      : 00:0B:FC:FF:E8:80
Motherboard assembly number    : 73-9832-02
Motherboard serial number      : FHH0916001J
Motherboard revision number    : 01
System serial number           : FHH0916001J
Hardware Board Revision Number : 0x01
```

Switch	Ports	Model	SW Version	SW Image
-----	-----	-----	-----	-----
* 1	26	WS-C2960-24TC-L	12.2(0.0.16)FX	C2960-LANBASE-M

```
Configuration register is 0xF
```

# show vlan

Use the **show vlan** user EXEC command to display the parameters for all configured VLANs or one VLAN (if the VLAN ID or name is specified) on the switch.


**Note**

The LAN Lite image does not support remote SPAN.

```
show vlan [brief | id vlan-id | mtu | name vlan-name | remote-span | summary] [| {begin |
exclude | include} expression]
```

**Syntax Description**

<b>brief</b>	(Optional) Display one line for each VLAN with the VLAN name, status, and its ports.
<b>id <i>vlan-id</i></b>	(Optional) Display information about a single VLAN identified by VLAN ID number. For <i>vlan-id</i> , the range is 1 to 4094.
<b>mtu</b>	(Optional) Display a list of VLANs and the minimum and maximum transmission unit (MTU) sizes configured on ports in the VLAN.
<b>name <i>vlan-name</i></b>	(Optional) Display information about a single VLAN identified by VLAN name. The VLAN name is an ASCII string from 1 to 32 characters.
<b>remote-span</b>	(Optional) Display information about Remote SPAN (RSPAN) VLANs.
<b>summary</b>	(Optional) Display VLAN summary information.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<b><i>expression</i></b>	Expression in the output to use as a reference point.


**Note**

Though visible in the command-line help string, the **ifindex**, **internal usage**, and **private-vlan** keywords are not supported.

**Command Modes**

User EXEC

**Command History**

Release	Modification
12.2(37)EY	This command was introduced.

**Usage Guidelines**

In the **show vlan mtu** command output, the MTU\_Mismatch column shows whether all the ports in the VLAN have the same MTU. When *yes* appears in this column, it means that the VLAN has ports with different MTUs, and packets that are switched from a port with a larger MTU to a port with a smaller MTU might be dropped. If the VLAN does not have an SVI, the hyphen (-) symbol appears in the SVI\_MTU column. If the MTU-Mismatch column displays *yes*, the names of the port with the MinMTU and the port with the MaxMTU appear.

Expressions are case sensitive. For example, if you enter `| exclude output`, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

### Examples

This is an example of output from the `show vlan` command. [Table 2-17](#) describes the fields in the display.

```
Switch> show vlan
VLAN Name                Status    Ports
-----
1    default                active   Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                   Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                   Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                   Gi0/13, Gi0/14, Gi0/15, Gi0/16

<output truncated>

2    VLAN0002              active
3    VLAN0003              active

<output truncated>

1000 VLAN1000            active
1002 fddi-default        active
1003 token-ring-default  active
1004 fddinet-default     active
1005 trnet-default       active

VLAN Type  SAID      MTU    Parent RingNo BridgeNo  Stp  BrdgMode Trans1  Trans2
-----
1    enet  100001   1500  -     -     -        -   -         1002   1003
2    enet  100002   1500  -     -     -        -   -         0      0
3    enet  100003   1500  -     -     -        -   -         0      0

<output truncated>

1005 trnet 101005   1500  -     -     -        ibm -         0      0

Remote SPAN VLANs
-----

Primary Secondary Type          Ports
-----
```

**Table 2-17** *show vlan Command Output Fields*

Field	Description
VLAN	VLAN number.
Name	Name, if configured, of the VLAN.
Status	Status of the VLAN (active or suspend).
Ports	Ports that belong to the VLAN.
Type	Media type of the VLAN.
SAID	Security association ID value for the VLAN.
MTU	Maximum transmission unit size for the VLAN.
Parent	Parent VLAN, if one exists.
RingNo	Ring number for the VLAN, if applicable.

**Table 2-17** *show vlan Command Output Fields (continued)*

Field	Description
BrdgNo	Bridge number for the VLAN, if applicable.
Stp	Spanning Tree Protocol type used on the VLAN.
BrdgMode	Bridging mode for this VLAN—possible values are source-route bridging (SRB) and source-route transparent (SRT); the default is SRB.
Trans1	Translation bridge 1.
Trans2	Translation bridge 2.
Remote SPAN VLANs	Identifies any RSPAN VLANs that have been configured.
Primary/Secondary/ Type/Ports	—

This is an example of output from the **show vlan summary** command:

```
Switch> show vlan summary
Number of existing VLANs           : 45
Number of existing VTP VLANs      : 45
Number of existing extended VLANs : 0
```

This is an example of output from the **show vlan id** command.

```
Switch# show vlan id 2
VLAN Name                Status    Ports
-----
2    VLAN0200                active    Gi0/1, Gi0/2

VLAN Type  SAID      MTU   Parent  RingNo  BridgeNo  Stp   BrdgMode  Trans1  Trans2
-----
2    enet    100002   1500   -       -        -    -         -       0      0

Remote SPAN VLAN
-----
Disabled
```

**Related Commands**

Command	Description
<a href="#">switchport mode</a>	Configures the VLAN membership mode of a port.
<a href="#">vlan (global configuration)</a>	Enables VLAN configuration mode where you can configure VLANs 1 to 4094.
<a href="#">vlan (VLAN configuration)</a>	Configures VLAN characteristics in the VLAN database. Only available for normal-range VLANs (VLAN IDs 1 to 1005). Do not enter leading zeros.

# show vmps

Use the **show vmps** user EXEC command without keywords to display the VLAN Query Protocol (VQP) version, reconfirmation interval, retry count, VLAN Membership Policy Server (VMPS) IP addresses, and the current and primary servers, or use the **statistics** keyword to display client-side statistics.

```
show vmps [statistics] [ | { begin | exclude | include } expression]
```

Syntax Description		
	<b>statistics</b>	(Optional) Display VQP client-side statistics and counters.
	<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
	<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
	<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
	<i>expression</i>	Expression in the output to use as a reference point.

**Command Modes** User EXEC

Command History	Release	Modification
	12.2(37)EY	This command was introduced.

**Usage Guidelines** Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

**Examples** This is an example of output from the **show vmps** command:

```
Switch> show vmps
VQP Client Status:
-----
VMPS VQP Version: 1
Reconfirm Interval: 60 min
Server Retry Count: 3
VMPS domain server:

Reconfirmation status
-----
VMPS Action:          other
```

This is an example of output from the **show vmps statistics** command. [Table 2-18](#) describes each field in the display.

```
Switch> show vmps statistics
VMPS Client Statistics
-----
VQP Queries:           0
VQP Responses:        0
VMPS Changes:         0
VQP Shutdowns:       0
VQP Denied:           0
VQP Wrong Domain:    0
VQP Wrong Version:   0
VQP Insufficient Resource: 0
```

**Table 2-18** *show vmps statistics Field Descriptions*

Field	Description
VQP Queries	Number of queries sent by the client to the VMPS.
VQP Responses	Number of responses sent to the client from the VMPS.
VMPS Changes	Number of times that the VMPS changed from one server to another.
VQP Shutdowns	Number of times the VMPS sent a response to shut down the port. The client disables the port and removes all dynamic addresses on this port from the address table. You must administratively re-enable the port to restore connectivity.
VQP Denied	Number of times the VMPS denied the client request for security reasons. When the VMPS response denies an address, no frame is forwarded to or from the workstation with that address (broadcast or multicast frames are delivered to the workstation if the port has been assigned to a VLAN). The client keeps the denied address in the address table as a blocked address to prevent more queries from being sent to the VMPS for each new packet received from this workstation. The client ages the address if no new packets are received from this workstation on this port within the aging time period.
VQP Wrong Domain	Number of times the management domain in the request does not match the one for the VMPS. Any previous VLAN assignments of the port are not changed. This response means that the server and the client have not been configured with the same VTP management domain.
VQP Wrong Version	Number of times the version field in the query packet contains a value that is higher than the version supported by the VMPS. The VLAN assignment of the port is not changed. The switches send only VMPS Version 1 requests.
VQP Insufficient Resource	Number of times the VMPS is unable to answer the request because of a resource availability problem. If the retry limit has not yet been reached, the client repeats the request with the same server or with the next alternate server, depending on whether the per-server retry count has been reached.

Related Commands	Command	Description
	<a href="#">clear vmps statistics</a>	Clears the statistics maintained by the VQP client.
	<a href="#">vmps reconfirm (privileged EXEC)</a>	Sends VQP queries to reconfirm all dynamic VLAN assignments with the VMPS.
	<a href="#">vmps retry</a>	Configures the per-server retry count for the VQP client.
	<a href="#">vmps server</a>	Configures the primary VMPS and up to three secondary servers.

# show vtp

Use the **show vtp** user EXEC command to display general information about the VLAN Trunking Protocol (VTP) management domain, status, and counters.

```
show vtp {counters | password | status} [ | {begin | exclude | include} expression]
```

## Syntax Description

<b>counters</b>	Display the VTP statistics for the switch.
<b>password</b>	Display the configured VTP password.
<b>status</b>	Display general information about the VTP management domain status.
<b>  begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>  exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>  include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.2(37)EY	This command was introduced.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

## Examples

This is an example of output from the **show vtp counters** command. [Table 2-19](#) describes each field in the display.

```
Switch> show vtp counters
```

```
VTP statistics:
Summary advertisements received      : 0
Subset advertisements received      : 0
Request advertisements received     : 0
Summary advertisements transmitted  : 0
Subset advertisements transmitted   : 0
Request advertisements transmitted   : 0
Number of config revision errors    : 0
Number of config digest errors      : 0
Number of V1 summary errors         : 0
```

```
VTP pruning statistics:
```

```

Trunk          Join Transmitted Join Received      Summary advts received from
                -----
                -----
                -----
                -----
Fa0/47         0                0                0
Fa0/48         0                0                0
Gi0/1         0                0                0
Gi0/2         0                0                0

```

**Table 2-19** *show vtp counters Field Descriptions*

Field	Description
Summary advertisements received	Number of summary advertisements received by this switch on its trunk ports. Summary advertisements contain the management domain name, the configuration revision number, the update timestamp and identity, the authentication checksum, and the number of subset advertisements to follow.
Subset advertisements received	Number of subset advertisements received by this switch on its trunk ports. Subset advertisements contain all the information for one or more VLANs.
Request advertisements received	Number of advertisement requests received by this switch on its trunk ports. Advertisement requests normally request information on all VLANs. They can also request information on a subset of VLANs.
Summary advertisements transmitted	Number of summary advertisements sent by this switch on its trunk ports. Summary advertisements contain the management domain name, the configuration revision number, the update timestamp and identity, the authentication checksum, and the number of subset advertisements to follow.
Subset advertisements transmitted	Number of subset advertisements sent by this switch on its trunk ports. Subset advertisements contain all the information for one or more VLANs.
Request advertisements transmitted	Number of advertisement requests sent by this switch on its trunk ports. Advertisement requests normally request information on all VLANs. They can also request information on a subset of VLANs.
Number of configuration revision errors	<p>Number of revision errors.</p> <p>Whenever you define a new VLAN, delete an existing one, suspend or resume an existing VLAN, or modify the parameters on an existing VLAN, the configuration revision number of the switch increments.</p> <p>Revision errors increment whenever the switch receives an advertisement whose revision number matches the revision number of the switch, but the MD5 digest values do not match. This error means that the VTP password in the two switches is different or that the switches have different configurations.</p> <p>These errors means that the switch is filtering incoming advertisements, which causes the VTP database to become unsynchronized across the network.</p>

**Table 2-19** *show vtp counters Field Descriptions (continued)*

Field	Description
Number of configuration digest errors	Number of MD5 digest errors.  Digest errors increment whenever the MD5 digest in the summary packet and the MD5 digest of the received advertisement calculated by the switch do not match. This error usually means that the VTP password in the two switches is different. To solve this problem, make sure the VTP password on all switches is the same.  These errors mean that the switch is filtering incoming advertisements, which causes the VTP database to become unsynchronized across the network.
Number of V1 summary errors	Number of Version 1 errors.  Version 1 summary errors increment whenever a switch in VTP V2 mode receives a VTP Version 1 frame. These errors mean that at least one neighboring switch is either running VTP Version 1 or VTP Version 2 with V2-mode disabled. To solve this problem, change the configuration of the switches in VTP V2-mode to disabled.
Join Transmitted	Number of VTP pruning messages sent on the trunk.
Join Received	Number of VTP pruning messages received on the trunk.
Summary Advts Received from non-pruning-capable device	Number of VTP summary messages received on the trunk from devices that do not support pruning.

This is an example of output from the **show vtp status** command. [Table 2-20](#) describes each field in the display.

```
Switch> show vtp status
VTP Version                : 2
Configuration Revision     : 0
Maximum VLANs supported locally : 1005
Number of existing VLANs   : 45
VTP Operating Mode        : Transparent
VTP Domain Name           : shared_testbed1
VTP Pruning Mode          : Disabled
VTP V2 Mode               : Disabled
VTP Traps Generation      : Enabled
MD5 digest                 : 0x3A 0x29 0x86 0x39 0xB4 0x5D 0x58 0xD7
```

**Table 2-20** *show vtp status Field Descriptions*

Field	Description
VTP Version	Displays the VTP version operating on the switch. By default, the switch implements Version 1 but can be set to Version 2.
Configuration Revision	Current configuration revision number on this switch.
Maximum VLANs Supported Locally	Maximum number of VLANs supported locally.
Number of Existing VLANs	Number of existing VLANs.

Table 2-20 *show vtp status Field Descriptions (continued)*

Field	Description
VTP Operating Mode	<p>Displays the VTP operating mode, which can be server, client, or transparent.</p> <p>Server: a switch in VTP server mode is enabled for VTP and sends advertisements. You can configure VLANs on it. The switch guarantees that it can recover all the VLAN information in the current VTP database from NVRAM after reboot. By default, every switch is a VTP server.</p> <p><b>Note</b> The switch automatically changes from VTP server mode to VTP client mode if it detects a failure while writing the configuration to NVRAM and cannot return to server mode until the NVRAM is functioning.</p> <p>Client: a switch in VTP client mode is enabled for VTP, can send advertisements, but does not have enough nonvolatile storage to store VLAN configurations. You cannot configure VLANs on it. When a VTP client starts up, it does not send VTP advertisements until it receives advertisements to initialize its VLAN database.</p> <p>Transparent: a switch in VTP transparent mode is disabled for VTP, does not send or learn from advertisements sent by other devices, and cannot affect VLAN configurations on other devices in the network. The switch receives VTP advertisements and forwards them on all trunk ports except the one on which the advertisement was received.</p>
VTP Domain Name	Name that identifies the administrative domain for the switch.
VTP Pruning Mode	Displays whether pruning is enabled or disabled. Enabling pruning on a VTP server enables pruning for the entire management domain. Pruning restricts flooded traffic to those trunk links that the traffic must use to access the appropriate network devices.
VTP V2 Mode	Displays if VTP Version 2 mode is enabled. All VTP Version 2 switches operate in Version 1 mode by default. Each VTP switch automatically detects the capabilities of all the other VTP devices. A network of VTP devices should be configured to Version 2 only if all VTP switches in the network can operate in Version 2 mode.
VTP Traps Generation	Displays whether VTP traps are sent to a network management station.
MD5 Digest	A 16-byte checksum of the VTP configuration.
Configuration Last Modified	Displays the date and time of the last configuration modification. Displays the IP address of the switch that caused the configuration change to the database.

**Related Commands**

Command	Description
<b>clear vtp counters</b>	Clears the VTP and pruning counters.
<b>vtp (global configuration)</b>	Configures the VTP filename, interface name, domain name, and mode.
<b>vtp (VLAN configuration)</b>	Configures the VTP domain name, password, pruning, and mode.

■ show vtp