

# rmon collection stats

Use the **rmon collection stats** interface configuration command on the switch stack or on a standalone switch 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.
<b>owner name</b>		(Optional) Owner of the RMON collection.

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

**Command Modes** Interface configuration

Command History	Release	Modification
	12.1(11)AX	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 gigabitethernet2/0/1
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 on the switch stack or on a standalone switch 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 a template to provide maximum system usage for unicast routing or for VLAN configuration, to change an aggregator template (Catalyst 3750-12S only) to a desktop template, or to select the dual IPv4 and IPv6 template to support IPv6 forwarding (supported only when the switch stack is running the advanced IP services image). Use the **no** form of this command to return to the default template.

```
sdm prefer { default | dual-ipv4-and-ipv6 { default | vlan } | routing | vlan } [desktop]
```

```
no sdm prefer
```

## Syntax Description

<b>default</b>	Sets the switch to use the default template. On Catalyst 3750-12S switches, use with the <b>desktop</b> keyword to set the switch to the default desktop template. (Use the <b>no sdm prefer</b> command to set a desktop switch to the default desktop template or to set an aggregator switch to the default aggregator template.)
<b>dual-ipv4-and-ipv6</b> { default   vlan }	Select a template that supports both IPv4 and IPv6 routing. <ul style="list-style-type: none"> <li>• <b>default</b>—Provide balance to IPv4 and IPv6 Layer 2 and Layer 3 functionality.</li> <li>• <b>vlan</b>—Provide maximum system usage for IPv4 and IPv6 VLANs.</li> </ul> <p><b>Note</b> Though visible on all switches, this option is supported only if the switch stack is running the advanced IP services image.</p>
<b>routing</b>	Provide maximum system usage for unicast routing. You would typically use this template for a router or aggregator in the middle of a network.
<b>vlan</b>	Provide maximum system usage for VLANs. This template maximizes system resources for use as a Layer 2 switch with no routing.
<b>desktop</b>	Use only on a Catalyst 3750-12S switch (where aggregator templates are the default), to select the desktop <b>default</b> , <b>routing</b> , or <b>vlan</b> template.

## Defaults

The default template provides a balance to all features.

## Command Modes

Global configuration

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.1(14)EA1	The aggregator templates were added.
12.2(25)SEA	The <b>dual-ipv4-and-ipv6</b> templates were added.

**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.

Desktop switches support only desktop templates; an aggregator switch (Catalyst 3750-12S) supports both desktop and aggregator templates. On an aggregator switch, if you do not enter the desktop keyword, the aggregator templates are selected.

All stack members use the same SDM desktop or aggregator template, stored on the stack master. When a new switch member is added to a stack, as with the switch configuration file and VLAN database file, the SDM configuration that is stored on the stack master overrides the template configured on an individual switch.

To use IPv6 throughout a stack, all switches in the stack must be running the advanced IP services image. When you enable forwarding of IPv6 packets, all stack member switches forward IPv6 packets in hardware.

If a stack member cannot support the template that is running on the master switch, the switch goes into SDM mismatch mode, the master switch does not attempt to change the SDM template, and the switch cannot be a functioning member of the stack.

- If the master switch is a Catalyst 3750-12S, and you change the template from an aggregator template to a desktop template and reload the switch, the entire stack operates with the selected desktop template. This could cause configuration losses if the number of ternary content addressable memory (TCAM) entries exceeds the desktop template sizes.
- If you change the template on a Catalyst 3750-12S master from a desktop template to an aggregator template and reload the switch, any desktop switches that were part of the stack go into SDM mismatch mode.
- If you add a Catalyst 3750-12S switch that is running the aggregator template to a stack that has a desktop switch as the stack master, the stack operates with the desktop template selected on the stack master. This could cause configuration losses on the Catalyst 3750-12S stack member if the number of TCAM entries on it exceeds desktop template sizes.

**Note**

For more information about stacking, see the “Managing Switch Stacks” chapter in the software configuration guide.

The default templates balance the use of system resources.

Use the **sdm prefer vlan [desktop]** global configuration command only on switches intended for Layer 2 switching with no routing. When you use the VLAN template, no system resources are reserved for routing entries, and any routing is done through software. This overloads the CPU and severely degrades routing performance.

Do not use the routing template if you do not have routing enabled on your switch. Entering the **sdm prefer routing [desktop]** global configuration command prevents other features from using the memory allocated to unicast routing in the routing template.

Do not use the **ipv4-and-ipv6** templates if you do not plan to enable IPv6 routing on the switch. Entering the **sdm prefer ipv4-and-ipv6 {default | vlan} [desktop]** global configuration command divides resources between IPv4 and IPv6, limiting those allocated to IPv4 forwarding.

[Table 2-15](#) lists the approximate number of each resource supported in each of the IPv4-only templates for a desktop or aggregator switch. The values in the template are based on eight routed interfaces and approximately one thousand VLANs and represent the approximate hardware boundaries set when a template is selected. If a section of a hardware resource is full, all processing overflow is sent to the CPU, seriously impacting switch performance.

**Table 2-15** *Approximate Number of Feature Resources Allowed by IPv4 Templates*

Resource	Desktop Templates			Aggregator Templates		
	Default	Routing	VLAN	Default	Routing	VLAN
Unicast MAC addresses	6 K	3 K	12 K	6 K	6 K	12 K
Internet Group Management Protocol (IGMP) groups and multicast routes	1 K	1 K	1 K	1 K	1 K	1 K
Unicast routes	8 K	11 K	0	12 K	20 K	0
• Directly connected hosts	6 K	3 K	0	6 K	6 K	0
• Indirect routes	2 K	8 K	0	6 K	14 K	0
Policy-based routing access control entries (ACEs)	0	512	0	0	512	0
Quality of service (QoS) classification ACEs	512	512	512	896	512	896
Security ACEs	1 K	1 K	1 K	1 K	1 K	1 K
Layer 2 VLANs	1 K	1 K	1 K	1 K	1 K	1 K

lists the approximate number of each resource supported in each of the IPv4-and IPv6 templates for a desktop or aggregator switch.

**Table 2-16** *Approximate Feature Resources Allowed by Dual IPv4-IPv6 Templates*

Resource	Desktop IPv4-and-IPv6 Templates		Aggregator IPv4-and-IPv6 Templates	
	Default	VLAN	Default	VLAN
Unicast MAC addresses	2 K	8 K	2 K	8 K
IPv4 IGMP groups and multicast routes	1 K	1 K	2 K	0
Total IPv4 unicast routes:	3 K	0	3 K	0
• Directly connected IPv4 hosts	2 K	0	2 K	0
• Indirect IPv4 routes	1 K	0	1 K	1 K
IPv6 multicast groups	1 K	1 K	1 K	1 K
Total IPv6 unicast routes:	3 K	0	3 K	0
• Directly connected IPv6 addresses	2 K	0	2 K	0
• Indirect IPv6 unicast routes	1 K	0	1 K	0
IPv4 policy-based routing ACEs	0	0	0	0
IPv4 or MAC QoS ACEs (total)	512	512	876	876
IPv4 or MAC security ACEs (total)	1 K	1K	512	1 K
IPv6 policy-based routing ACEs	0	0	0	0
IPv6 QoS ACEs	510	510	876	876
IPv6 security ACEs	510	510	876	876

**Examples**

This example shows how to configure the routing template on a desktop switch:

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

This example shows how to configure the desktop routing template on an aggregator switch:

```
Switch(config)# sdm prefer routing desktop
Switch(config)# exit
Switch# reload
```

This example shows how to configure the dual IPv4-and-IPv6 default template on a desktop switch:

```
Switch(config)# sdm prefer dual-ipv4-and-ipv6 default
Switch(config)# exit
Switch# reload
```

This example shows how to change a switch template to the default template. On an aggregator switch, this is the default aggregator template; on a desktop switch, this is the default desktop template.

```
Switch(config)# no sdm prefer
Switch(config)# exit
Switch# reload
```

This example shows how to configure the desktop default template on an aggregator switch:

```
Switch(config)# sdm prefer default desktop
Switch(config)# exit
Switch# reload
```

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

**Related Commands**

Command	Description
<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 on the switch stack or on a standalone switch 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 boot 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 boot 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
	12.1(11)AX	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 boot 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.

When you enter the **service password-recovery** or **no service password-recovery** command on the stack master, it is propagated throughout the stack and applied to all switches in the stack.

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 or switch stack 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.

# service-policy

Use the **service-policy** interface configuration command on the switch stack or on a standalone switch to apply a policy map defined by the **policy-map** command to the input of a physical port or a switch virtual interface (SVI). Use the **no** form of this command to remove the policy map and port association.

**service-policy input** *policy-map-name*

**no service-policy input** *policy-map-name*

## Syntax Description

**input** *policy-map-name* Apply the specified policy map to the input of a physical port or an SVI.



## Note

Though visible in the command-line help strings, the **history** keyword is not supported, and you should ignore the statistics that it gathers. The **output** keyword is also not supported.

## Defaults

No policy maps are attached to the port.

## Command Modes

Interface configuration

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.2(25)SE	A policy map can now be applied to a physical port or an SVI.

## Usage Guidelines

Only one policy map per ingress port is supported. In software releases earlier than Cisco IOS Release 12.2(25)SE, policy maps can be configured only on physical ports.

In Cisco IOS Release 12.2(25)SE or later, policy maps can be configured on physical ports or on SVIs. When VLAN-based quality of service (QoS) is disabled by using the **no mls qos vlan-based** interface configuration command on a physical port, you can configure a port-based policy map on the port. If VLAN-based QoS is enabled by using the **mls qos vlan-based** interface configuration command on a physical port, the switch removes the previously configured port-based policy map. After a hierarchical policy map is configured and applied on an SVI, the interface-level policy map takes effect on the interface.

In software releases earlier than Cisco IOS Release 12.2(25)SE, you can apply a policy map only to the input of a physical port. In Cisco IOS Release 12.2(25)SE or later, you can apply a policy map to the input of a physical port or an SVI.

Classification using a port trust state (for example, **mls qos trust [cos | dscp | ip-precedence]**) and a policy map (for example, **service-policy input** *policy-map-name*) are mutually exclusive. The last one configured overwrites the previous configuration.

Policy maps that use the **police aggregate** command fail when applied to a 10-Gigabit Ethernet interface.



**Examples**

This example shows how to apply *plcmap1* to an physical ingress port:

```
Switch(config)# interface gigabitethernet2/0/1
Switch(config-if)# service-policy input plcmap1
```

This example shows how to remove *plcmap2* from a physical port:

```
Switch(config)# interface gigabitethernet2/0/2
Switch(config-if)# no service-policy input plcmap2
```

This example shows how to apply *plcmap1* to an ingress SVI when VLAN-based QoS is enabled:

```
Switch(config)# interface vlan 10
Switch(config-if)# service-policy input plcmap1
```

You can verify your settings by entering the **show running-config** privileged EXEC command.

**Related Commands**

Command	Description
<a href="#">policy-map</a>	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
<a href="#">show policy-map</a>	Displays QoS policy maps.
<a href="#">show running-config</a>	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> .

# session

Use the **session** privileged EXEC command on the stack master to access a specific stack member.

**session** *stack-member-number*

<b>Syntax Description</b>	<i>stack-member-number</i>	Specify the stack member number. The range is 1 to 9.
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<b>Defaults</b>	No default is defined.
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<b>Command Modes</b>	Global configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.1(11)AX	This command was introduced.

<b>Usage Guidelines</b>	When you access the stack member, its stack member number is appended to the system prompt.
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<b>Examples</b>	This example shows how to access stack member 6:
-----------------	--

```
Switch(config)# session 6
Switch-6#
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">reload</a>	Reloads the stack member and puts a configuration change into effect.
	<a href="#">switch priority</a>	Changes the stack member priority value.
	<a href="#">switch renumber</a>	Changes the stack member number.
	<a href="#">show switch</a>	Displays information about the switch stack and its stack members.

# set

Use the **set** policy-map class configuration command on the switch stack or on a standalone switch 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}
```



## Note

Beginning with Cisco IOS Release 12.2(25)SE, the **set dscp new-dscp** command replaces the **set ip dscp new-dscp** command.

## Syntax Description

<b>dscp new-dscp</b>	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 precedence new-precedence</b>	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
12.1(11)AX	This command was introduced.
12.2(25)SE	The <b>ip dscp new-dscp</b> keyword was changed to <b>dscp new-dscp</b> .

## Usage Guidelines

In Cisco IOS Release 12.2(25)SE or later, if you have used the **set ip dscp** command, the switch changes this command to **set dscp** in the switch configuration. If you enter the **set ip dscp** command, this setting appears as **set dscp** 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
<b>class</b>	Defines a traffic classification match criteria (through the <b>police</b> , <b>set</b> , and <b>trust</b> policy-map class configuration commands) for the specified class-map name.
<b>police</b>	Defines a policer for classified traffic.
<b>policy-map</b>	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
<b>show policy-map</b>	Displays QoS policy maps.
<b>trust</b>	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
	12.1(11)AX	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
GigabitEthernet6/0/1	unassigned	YES	unset	up	up
GigabitEthernet6/0/2	unassigned	YES	unset	up	down

<output truncated>

Port-channel1	unassigned	YES	unset	up	down
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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 GigabitEthernet6/0/1
no ip address
!
interface GigabitEthernet6/0/2
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**

Command	Description
<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 on the switch stack or on a standalone switch. 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

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Command History	Release	Modification
	12.1(14)EA1	This command was introduced.

---



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**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.



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**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**

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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.

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**Related Commands**

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

---

# show access-lists

Use the **show access-lists** privileged EXEC command to display access control lists (ACLs) configured on the switch.

```
show access-lists [name | number | hardware counters | ipc] [ | {begin | exclude | include}
expression]
```

## Syntax Description

<i>name</i>	(Optional) Name of the ACL.
<i>number</i>	(Optional) ACL number. The range is 1 to 2699.
<b>hardware counters</b>	(Optional) Display global hardware ACL statistics for switched and routed packets.
<b>ipc</b>	(Optional) Display Interprocess Communication (IPC) protocol access-list configuration download 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.



## Note

Though visible in the command-line help strings, the **rate-limit** keywords are not supported.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.1(14)EA1	The <b>ipc</b> keyword was added.

## Usage Guidelines

The switch supports only IP standard and extended access lists. Therefore, the allowed numbers are only 1 to 199 and 1300 to 2699.

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 access-lists** command:

```
Switch# show access-lists
Standard IP access list 1
 10 permit 1.1.1.1
 20 permit 2.2.2.2
 30 permit any
 40 permit 0.255.255.255, wildcard bits 12.0.0.0
Standard IP access list videowizard_1-1-1-1
 10 permit 1.1.1.1
Standard IP access list videowizard_10-10-10-10
 10 permit 10.10.10.10
Extended IP access list 121
 10 permit ahp host 10.10.10.10 host 20.20.10.10 precedence routine
Extended IP access list CMP-NAT-ACL
Dynamic Cluster-HSRP deny ip any any
 10 deny ip any host 19.19.11.11
 20 deny ip any host 10.11.12.13
Dynamic Cluster-NAT permit ip any any
 10 permit ip host 10.99.100.128 any
 20 permit ip host 10.46.22.128 any
 30 permit ip host 10.45.101.64 any
 40 permit ip host 10.45.20.64 any
 50 permit ip host 10.213.43.128 any
 60 permit ip host 10.91.28.64 any
 70 permit ip host 10.99.75.128 any
 80 permit ip host 10.38.49.0 any
```

This is an example of output from the **show access-lists hardware counters** command:

```
Switch# show access-lists hardware counters
L2 ACL INPUT Statistics
Drop: All frame count: 855
Drop: All bytes count: 94143
Drop And Log: All frame count: 0
Drop And Log: All bytes count: 0
Bridge Only: All frame count: 0
Bridge Only: All bytes count: 0
Bridge Only And Log: All frame count: 0
Bridge Only And Log: All bytes count: 0
Forwarding To CPU: All frame count: 0
Forwarding To CPU: All bytes count: 0
Forwarded: All frame count: 2121
Forwarded: All bytes count: 180762
Forwarded And Log: All frame count: 0
Forwarded And Log: All bytes count: 0

L3 ACL INPUT Statistics
Drop: All frame count: 0
Drop: All bytes count: 0
Drop And Log: All frame count: 0
Drop And Log: All bytes count: 0
Bridge Only: All frame count: 0
Bridge Only: All bytes count: 0
Bridge Only And Log: All frame count: 0
Bridge Only And Log: All bytes count: 0
Forwarding To CPU: All frame count: 0
Forwarding To CPU: All bytes count: 0
Forwarded: All frame count: 13586
Forwarded: All bytes count: 1236182
Forwarded And Log: All frame count: 0
Forwarded And Log: All bytes count: 0

L2 ACL OUTPUT Statistics
```

## show access-lists

```

Drop:                All frame count: 0
Drop:                All bytes count: 0
Drop And Log:        All frame count: 0
Drop And Log:        All bytes count: 0
Bridge Only:         All frame count: 0
Bridge Only:         All bytes count: 0
Bridge Only And Log: All frame count: 0
Bridge Only And Log: All bytes count: 0
Forwarding To CPU:   All frame count: 0
Forwarding To CPU:   All bytes count: 0
Forwarded:           All frame count: 232983
Forwarded:           All bytes count: 16825661
Forwarded And Log:   All frame count: 0
Forwarded And Log:   All bytes count: 0

```

## L3 ACL OUTPUT Statistics

```

Drop:                All frame count: 0
Drop:                All bytes count: 0
Drop And Log:        All frame count: 0
Drop And Log:        All bytes count: 0
Bridge Only:         All frame count: 0
Bridge Only:         All bytes count: 0
Bridge Only And Log: All frame count: 0
Bridge Only And Log: All bytes count: 0
Forwarding To CPU:   All frame count: 0
Forwarding To CPU:   All bytes count: 0
Forwarded:           All frame count: 514434
Forwarded:           All bytes count: 39048748
Forwarded And Log:   All frame count: 0
Forwarded And Log:   All bytes count: 0

```

## Related Commands

Command	Description
<b>access-list</b>	Configures a standard or extended numbered access list on the switch. For syntax information, select <b>Cisco IOS IP Command Reference, Volume 1 of 3:Addressing and Services, Release 12.2 &gt; IP Services Commands</b> .
<b>ip access list</b>	Configures a named IP access list on the switch. For syntax information, select <b>Cisco IOS IP Command Reference, Volume 1 of 3:Addressing and Services, Release 12.2 &gt; IP Services Commands</b> .
<b>mac access-list extended</b>	Configures a named or numbered MAC access list on the switch.

# 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 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(20)SE	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 arp access-list

Use the **show arp access-list** user EXEC command to display detailed information about Address Resolution Protocol (ARP) access control (lists).

```
show arp access-list [acl-name] [ | { begin | exclude | include } expression ]
```

This command is available only if your switch is running the enhanced multilayer image (EMI).

## Syntax Description

<i>acl-name</i>	(Optional) Name of the ACL.
<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(20)SE	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 arp access-list** command:

```
Switch> show arp access-list
ARP access list rose
  permit ip 10.101.1.1 0.0.0.255 mac any
  permit ip 20.3.1.0 0.0.0.255 mac any
```

## Related Commands

Command	Description
<a href="#">arp access-list</a>	Defines an ARP ACL.
<a href="#">deny (ARP access-list configuration)</a>	Denies an ARP packet based on matches against the Dynamic Host Configuration Protocol (DHCP) bindings.
<a href="#">ip arp inspection filter vlan</a>	Permits ARP requests and responses from a host configured with a static IP address.
<a href="#">permit (ARP access-list configuration)</a>	Permits an ARP packet based on matches against the DHCP bindings.

# show auto qos

Use the **show auto qos** user EXEC command to display the quality of service (QoS) commands entered on the interfaces on which automatic QoS (auto-QoS) is enabled.

**show auto qos** [**interface** *interface-id*]

## Syntax Description

<b>interface</b> <i>interface-id</i>	(Optional) Display auto-QoS information for the specified port or for all ports. Valid interfaces include physical ports.
--------------------------------------	---

## Command Modes

User EXEC

## Command History

Release	Modification
12.1(14)EA1	This command was introduced.
12.2(20)SE	The information in the command output changed, and the user guidelines were updated.

## Usage Guidelines

In releases earlier than Cisco IOS Release 12.2(20)SE, the **show auto qos** [**interface** *interface-id*] command output shows the initial generated auto-QoS configuration.

In Cisco IOS Release 12.2(20)SE or later, the **show auto qos** command output shows only the auto-QoS command entered on each interface. The **show auto qos interface** *interface-id* command output shows the auto-QoS command entered on a specific interface.

Use the **show running-config** privileged EXEC command to display the auto-QoS configuration and the user modifications.

To display information about the QoS configuration that might be affected by auto-QoS, use one of these commands:

- **show mls qos**
- **show mls qos maps cos-dscp**
- **show mls qos interface** *interface-id* [**buffers** | **queueing**]
- **show mls qos maps** [**cos-dscp** | **cos-input-q** | **cos-output-q** | **dscp-cos** | **dscp-input-q** | **dscp-output-q**]
- **show mls qos input-queue**
- **show running-config**

**Examples**

This is an example of output from the **show auto qos** command after the **auto qos voip cisco-phone** and the **auto qos voip cisco-softphone** interface configuration commands are entered:

```
Switch> show auto qos
GigabitEthernet2/0/4
auto qos voip cisco-softphone
```

```
GigabitEthernet2/0/5
auto qos voip cisco-phone
```

```
GigabitEthernet2/0/6
auto qos voip cisco-phone
```

This is an example of output from the **show auto qos interface interface-id** command when the **auto qos voip cisco-phone** interface configuration command is entered:

```
Switch> show auto qos interface gigabitethernet 2/0/5
GigabitEthernet2/0/5
auto qos voip cisco-phone
```

This is an example of output from the **show running-config** privileged EXEC command when the **auto qos voip cisco-phone** and the **auto qos voip cisco-softphone** interface configuration commands are entered:

```
Switch# show running-config
Building configuration...
...
mls qos map policed-dscp 24 26 46 to 0
mls qos map cos-dscp 0 8 16 26 32 46 48 56
mls qos srr-queue input bandwidth 90 10
mls qos srr-queue input threshold 1 8 16
mls qos srr-queue input threshold 2 34 66
mls qos srr-queue input buffers 67 33
mls qos srr-queue input cos-map queue 1 threshold 2 1
mls qos srr-queue input cos-map queue 1 threshold 3 0
mls qos srr-queue input cos-map queue 2 threshold 1 2
mls qos srr-queue input cos-map queue 2 threshold 2 4 6 7
mls qos srr-queue input cos-map queue 2 threshold 3 3 5
mls qos srr-queue input dscp-map queue 1 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue input dscp-map queue 1 threshold 3 0 1 2 3 4 5 6 7
mls qos srr-queue input dscp-map queue 1 threshold 3 32
mls qos srr-queue input dscp-map queue 2 threshold 1 16 17 18 19 20 21 22 23
mls qos srr-queue input dscp-map queue 2 threshold 2 33 34 35 36 37 38 39 48
mls qos srr-queue input dscp-map queue 2 threshold 2 49 50 51 52 53 54 55 56
mls qos srr-queue input dscp-map queue 2 threshold 2 57 58 59 60 61 62 63
mls qos srr-queue input dscp-map queue 2 threshold 3 24 25 26 27 28 29 30 31
mls qos srr-queue input dscp-map queue 2 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output cos-map queue 1 threshold 3 5
mls qos srr-queue output cos-map queue 2 threshold 3 3 6 7
mls qos srr-queue output cos-map queue 3 threshold 3 2 4
mls qos srr-queue output cos-map queue 4 threshold 2 1
mls qos srr-queue output cos-map queue 4 threshold 3 0
mls qos srr-queue output dscp-map queue 1 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output dscp-map queue 2 threshold 3 24 25 26 27 28 29 30 31
mls qos srr-queue output dscp-map queue 2 threshold 3 48 49 50 51 52 53 54 55
mls qos srr-queue output dscp-map queue 2 threshold 3 56 57 58 59 60 61 62 63
mls qos srr-queue output dscp-map queue 3 threshold 3 16 17 18 19 20 21 22 23
mls qos srr-queue output dscp-map queue 3 threshold 3 32 33 34 35 36 37 38 39
mls qos srr-queue output dscp-map queue 4 threshold 1 8
mls qos srr-queue output dscp-map queue 4 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue output dscp-map queue 4 threshold 3 0 1 2 3 4 5 6 7
mls qos queue-set output 1 threshold 1 100 100 100 100
mls qos queue-set output 1 threshold 2 75 75 75 250
```



```

mls qos queue-set output 1 threshold 3 75 150 100 300
mls qos queue-set output 1 threshold 4 50 100 75 400
mls qos queue-set output 2 threshold 1 100 100 100 100
mls qos queue-set output 2 threshold 2 35 35 35 35
mls qos queue-set output 2 threshold 3 55 82 100 182
mls qos queue-set output 2 threshold 4 90 250 100 400
mls qos queue-set output 1 buffers 15 20 20 45
mls qos queue-set output 2 buffers 24 20 26 30
mls qos
...
!
class-map match-all AutoQoS-VoIP-RTP-Trust
  match ip dscp ef
class-map match-all AutoQoS-VoIP-Control-Trust
  match ip dscp cs3 af31
!
policy-map AutoQoS-Police-SoftPhone
  class AutoQoS-VoIP-RTP-Trust
    set dscp ef
    police 320000 8000 exceed-action policed-dscp-transmit
  class AutoQoS-VoIP-Control-Trust
    set dscp cs3
    police 32000 8000 exceed-action policed-dscp-transmit
!
...
!
interface GigabitEthernet2/0/4
  switchport mode access
  switchport port-security maximum 400
  service-policy input AutoQoS-Police-SoftPhone
  speed 100
  duplex half
  srr-queue bandwidth share 10 10 60 20
  srr-queue bandwidth shape 10 0 0 0
  auto qos voip cisco-softphone
!
interface GigabitEthernet2/0/5
  switchport mode access
  switchport port-security maximum 1999
  speed 100
  duplex full
  srr-queue bandwidth share 10 10 60 20
  srr-queue bandwidth shape 10 0 0 0
  mls qos trust device cisco-phone
  mls qos trust cos
  auto qos voip cisco-phone
!
interface GigabitEthernet2/0/6
  switchport trunk encapsulation dot1q
  switchport trunk native vlan 2
  switchport mode access
  speed 10
  srr-queue bandwidth share 10 10 60 20
  srr-queue bandwidth shape 10 0 0 0
  mls qos trust device cisco-phone
  mls qos trust cos
  auto qos voip cisco-phone
!
<output truncated>

```

This is an example of output from the **show auto qos interface *interface-id*** command when the **auto qos voip cisco-phone** interface configuration command is entered:

```
Switch> show auto qos interface fastethernet1/0/2
FastEthernet1/0/2
auto qos voip cisco-phone
```

These are examples of output from the **show auto qos** command when auto-QoS is disabled on the switch:

```
Switch> show auto qos
AutoQoS not enabled on any interface
```

These are examples of output from the **show auto qos interface *interface-id*** command when auto-QoS is disabled on an interface:

```
Switch> show auto qos interface gigabitethernet3/0/1
AutoQoS is disabled
```

#### Related Commands

Command	Description
<a href="#">auto qos voip</a>	Automatically configures QoS for VoIP within a QoS domain.
<a href="#">debug auto qos</a>	Enables debugging of the auto-QoS feature.

# 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
	12.1(11)AX	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 for all stack members. [Table 2-17](#) describes each field in the display.

```
Switch# show boot
BOOT path-list      :flash:/c3750-i5-mz
Config file        :flash:/config.text
Private Config file :flash:/private-config.text
Enable Break       :no
Manual Boot        :yes
HELPER path-list   :
Auto upgrade       :yes
-----
Switch 1
-----
BOOT path-list      :flash:/c3750-i5-mz
Config file        :flash:/config.text
Private Config file :flash:/private-config.text
Enable Break       :no
Manual Boot        :yes
HELPER path-list   :
Auto upgrade       :no

<output truncated>
```

Table 2-17 show boot Field Descriptions

Field	Description
BOOT path-list	<p>Displays a semicolon separated list of executable files to try to load and execute when automatically booting.</p> <p>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.</p> <p>If the BOOT variable is set but the specified images cannot be loaded, the system attempts to boot the first bootable file that it can find in the flash file system.</p>
Config file	Displays the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.
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 is enabled or disabled. If it is set to yes, on, or 1, you can interrupt the automatic boot 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. If it is set to no or 0, the boot loader attempts to automatically boot the system. If it is set to anything else, you must manually boot the switch from the boot loader mode.
Helper path-list	Displays a semicolon separated list of loadable files to dynamically load during the boot loader initialization. Helper files extend or patch the functionality of the boot loader.
Auto upgrade	<p>Displays whether the switch stack is set to automatically copy its software version to an incompatible switch so that it can join the stack.</p> <p>A switch in version-mismatch (VM) mode is a switch that has a different stack protocol version than the version on the switch stack. Switches in VM mode cannot join the switch stack. If the switch stack has an image that can be copied to a switch in VM mode, and if the <b>boot auto-copy-sw</b> feature is enabled, the switch stack automatically copies the image from another stack member to the switch in VM mode. The switch then exits VM mode, reboots, and joins the switch stack.</p>

Related Commands	Command	Description
	<b>boot auto-copy-sw</b>	Enables the automatic upgrade (auto-upgrade) process to automatically upgrade a switch in version-mismatch (VM) mode.
	<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 the switch during the next boot 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 boot 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
	12.1(19)EA1	This command was introduced.

**Usage Guidelines** TDR is supported only on copper Ethernet 10/100/1000 ports. It is not supported on 10/100 ports, 10-Gigabit module ports, or small form-factor pluggable (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 on a switch other than a Catalyst 3750G-24PS or 3750G-48PS switch:

```
Switch# show cable-diagnostics tdr interface gigabitethernet1/0/2
TDR test last run on: March 01 20:15:40
Interface Speed Local pair Pair length Remote pair Pair status
-----
Gil/0/2 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
```

This is an example of output from the **show cable-diagnostics tdr interface** *interface-id* command on a Catalyst 3750G-24PS or 3750G-48PS switch:

```
Switch# show cable-diagnostics tdr interface gigabitethernet1/0/2
TDR test last run on: March 01 20:15:40
Interface Speed Local pair Pair length Remote pair Pair status
-----
Gi1/0/2 auto Pair A 0 +/- 4 meters N/A Open
          Pair B 0 +/- 4 meters N/A Open
          Pair C 0 +/- 4 meters N/A Open
          Pair D 0 +/- 4 meters N/A Open
```

Table 2-18 lists the descriptions of the fields in the **show cable-diagnostics tdr** command output.

**Table 2-18** 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.
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 Mbps.</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 interface** *interface-id* command when TDR is running:

```
Switch# show interface gigabitethernet1/0/2
gigabitethernet1/0/2 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 gigabitethernet1/0/2
% TDR test was never issued on Gi1/0/2
```

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

```
Switch# show cable-diagnostics tdr interface gigabitethernet1/0/28
% 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 class-map

Use the **show class-map** user EXEC command to display quality of service (QoS) class maps, which define the match criteria to classify traffic.

```
show class-map [class-map-name] [ | { begin | exclude | include } expression]
```

## Syntax Description

<i>class-map-name</i>	(Optional) Display the contents of the specified class 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
12.1(11)AX	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 class-map** command:

```
Switch> show class-map
Class Map match-all videowizard_10-10-10-10 (id 2)
  Match access-group name videowizard_10-10-10-10

Class Map match-any class-default (id 0)
  Match any
Class Map match-all dscp5 (id 3)
  Match ip dscp 5
```

## Related Commands

Command	Description
<a href="#">class-map</a>	Creates a class map to be used for matching packets to the class whose name you specify.
<a href="#">match (class-map configuration)</a>	Defines the match criteria to classify traffic.



# 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
	12.1(11)AX	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 stack or 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 on a switch stack or on a cluster command switch to display a list of candidate switches.

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

Syntax Description		
<b>detail</b>	(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
	12.1(11)AX	This command was introduced.

**Usage Guidelines** This command is available only on the cluster command switch stack or 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-C3750-12T Gi6/0/1   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-C3750-12T
  Upstream MAC address: 00d0.796d.2f00 (Cluster Member 0)
  Local port:          Gi6/0/1   FEC number:
  Upstream port:       GI6/0/11  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 on a switch stack or on a cluster command switch 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
	12.1(11)AX	This command was introduced.

**Usage Guidelines** This command is available only on the cluster command switch stack or 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      0      Up  (Cmdr)
1  0030.946c.d740 tal-switch-1 Fa0/13      1      0      0      Up
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-C3750-12T
  MAC address:         0002.4b29.4400
  Upstream MAC address: 0030.946c.d740 (Cluster member 1)
  Local port:          Gi6/0/1   FEC number:
  Upstream port:       GI6/0/11  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-C3750-12T
  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-C3750-12T
  MAC address:         0002.4b29.4400
  Upstream MAC address: 0030.946c.d740 (Cluster member 1)
  Local port:          Gi6/0/1   FEC number:
  Upstream port:       Fa6/0/11  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
	12.1(11)AX	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}] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>interface-id</i>	The physical interface (including type, stack member, 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
12.1(11)AX	This command was introduced.
12.2(20)SE	The display was enhanced to show the XENPAK module serial EEPROM contents.

## 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 2-19](#) describes the *Transmit* fields, and [Table 2-20](#) describes the *Receive* fields.

```
Switch# show controllers ethernet-controller gigabitEthernet6/0/1
Transmit GigabitEthernet6/0/1          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 2-19** 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 2-19** 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 2-20** 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 2-20** 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 2-20 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. Note that the last line of the display is the setting for Auto-MDIX for the interface.

```
Switch# show controllers ethernet-controller gigabitEthernet1/0/2 phy
Control Register          : 0001 0001 0100 0000
Control STATUS           : 0111 1001 0100 1001
Phy ID 1                  : 0000 0001 0100 0001
Phy ID 2                  : 0000 1100 0010 0100
Auto-Negotiation Advertisement : 0000 0011 1110 0001
Auto-Negotiation Link Partner : 0000 0000 0000 0000
Auto-Negotiation Expansion Reg : 0000 0000 0000 0100
Next Page Transmit Register : 0010 0000 0000 0001
Link Partner Next page Register : 0000 0000 0000 0000
1000BASE-T Control Register : 0000 1111 0000 0000
1000BASE-T Status Register  : 0100 0000 0000 0000
Extended Status Register   : 0011 0000 0000 0000
PHY Specific Control Register : 0000 0000 0111 1000
PHY Specific Status Register : 1000 0001 0100 0000
Interrupt Enable           : 0000 0000 0000 0000
Interrupt Status           : 0000 0000 0100 0000
Extended PHY Specific Control : 0000 1100 0110 1000
Receive Error Counter      : 0000 0000 0000 0000
Reserved Register 1        : 0000 0000 0000 0000
Global Status              : 0000 0000 0000 0000
LED Control                : 0100 0001 0000 0000
Manual LED Override        : 0000 1000 0010 1010
Extended PHY Specific Control : 0000 0000 0001 1010
Disable Receiver 1         : 0000 0000 0000 1011
Disable Receiver 2         : 1000 0000 0000 0100
Extended PHY Specific Status : 1000 0100 1000 0000
Auto-MDIX                  : On [AdminState=1  Flags=0x00052248]
```

This is an example of output from the **show controllers ethernet-controller tengigabitEthernet1/0/1 phy** command for the 10-Gigabit Ethernet interface. It shows the XENPAK module serial EEPROM contents.

For information about the EEPROM map and the field descriptions for the display, see the XENPAK multisource agreement (MSA) at these sites:

[http://www.xenpak.org/MSA/XENPAK\\_MSA\\_R2.1.pdf](http://www.xenpak.org/MSA/XENPAK_MSA_R2.1.pdf)

[http://www.xenpak.org/MSA/XENPAK\\_MSA\\_R3.0.pdf](http://www.xenpak.org/MSA/XENPAK_MSA_R3.0.pdf)

To determine which version of the XENPAK documentation to read, check the *XENPAK MSA Version supported* field in the display. Version 2.1 is 15 hexadecimal, and Version 3.0 is 1e hexadecimal.

```
Switch# show controllers ethernet-controller tengigabitethernet1/0/1 phy
```

```
TenGigabitEthernet1/0/1 (gpn:472, port-number:1)
```

```
-----
XENPAK Serial EEPROM Contents:
Non-Volatile Register (NVR) Fields
  XENPAK MSA Version supported      :0x15
  NVR Size in bytes                 :0x100
  Number of bytes used              :0xD0
  Basic Field Address               :0xB
  Customer Field Address            :0x77
  Vendor Field Address              :0xA7
  Extended Vendor Field Address     :0x100
  Reserved                          :0x0
  Transceiver type                  :0x1 =XENPAK
  Optical connector type            :0x1 =SC
  Bit encoding                      :0x1 =NRZ
  Normal BitRate in multiple of 1M b/s :0x2848
  Protocol Type                    :0x1 =10GgE

Standards Compliance Codes :
  10GbE Code Byte 0                :0x2 =10GBASE-LR
  10GbE Code Byte 1                :0x0
  SONET/SDH Code Byte 0            :0x0
  SONET/SDH Code Byte 1            :0x0
  SONET/SDH Code Byte 2            :0x0
  SONET/SDH Code Byte 3            :0x0
  10GFC Code Byte 0                :0x0
  10GFC Code Byte 1                :0x0
  10GFC Code Byte 2                :0x0
  10GFC Code Byte 3                :0x0
  Transmission range in 10m        :0x3E8

Fibre Type :
  Fibre Type Byte 0                :0x40 =NDSF only
  Fibre Type Byte 1                :0x0 =Unspecified

Centre Optical Wavelength in 0.01nm steps - Channel 0 :0x1 0xFF 0xB8
Centre Optical Wavelength in 0.01nm steps - Channel 1 :0x0 0x0 0x0
Centre Optical Wavelength in 0.01nm steps - Channel 2 :0x0 0x0 0x0
Centre Optical Wavelength in 0.01nm steps - Channel 3 :0x0 0x0 0x0
Package Identifier OUI   :0x41F420
Transceiver Vendor OUI   :0x3400871
Transceiver vendor name  :CISCO-OPNEXT,INC
Part number provided by transceiver vendor      :800-24558-01
Revision level of part number provided by vendor :01
Vendor serial number     :ONJ0735003U
Vendor manufacturing date code :2003082700

Reserved1 :00 00 00 00 00 00 00
Basic Field Checksum :0x6C

Customer Writable Area :
  0x00:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x10:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x20:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Vendor Specific :
  0x00:41 00 20 F4 88 84 28 94 C0 00 30 14 06 39 00 D9
  0x10:03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x20:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

## show controllers ethernet-controller

```
0x30:00 00 00 00 11 5E 19 E9 BF 1B AD 98 03 9B DF 87
0x40:CC F6 45 FF 99 00 00 00 00 00 00 00 00 C0 48
0x50:46 D2 00 00 00 00 00 00 00
```

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 4, 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 0000FF8 00000000
                          0000088A 0000085D 0000FF8 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-1 enqueue frames
158377 RxQ-2, wt-2 enqueue frames

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

15 TxBufferFull Drop Count
0 TxBufferFrameDesc BadCrc16
0 TxBuffer Bandwidth Drop Cou
0 TxQueue Bandwidth Drop Coun
0 TxQueue Missed Drop Statist
74 RxBuffer Drop DestIndex Cou
0 SneakQueue Drop Count
0 Learning Queue Overflow Fra
0 Learning Cam Skip Count

15 Sup Queue 0 Drop Frames
0 Sup Queue 1 Drop Frames
0 Sup Queue 2 Drop Frames
0 Sup Queue 3 Drop Frames
0 Sup Queue 4 Drop Frames
0 Sup Queue 5 Drop Frames
0 Sup Queue 6 Drop Frames
0 Sup Queue 7 Drop Frames

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

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

0 Rx Fcs Error Frames
0 Rx Invalid Oversize Frames
0 Rx Invalid Too Large Frames
0 Rx Invalid Too Large Frames
0 Rx Invalid Too Small Frames
0 Rx Too Old Frames
0 Tx Too Old Frames
0 System Fcs Error Frames

0 Sup Queue 8 Drop Frames
0 Sup Queue 9 Drop Frames
0 Sup Queue 10 Drop Frames
0 Sup Queue 11 Drop Frames
0 Sup Queue 12 Drop Frames
0 Sup Queue 13 Drop Frames
0 Sup Queue 14 Drop Frames
0 Sup Queue 15 Drop Frames
=====
Switch 1, PortASIC 1 Statistics
-----
0 RxQ-0, wt-0 enqueue frames
52 RxQ-0, wt-1 enqueue frames
0 RxQ-0, wt-2 enqueue frames

0 RxQ-0, wt-0 drop frames
0 RxQ-0, wt-1 drop 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.
<a href="#">show idprom</a>	Displays the IDPROM information for the specified interface.

# show controllers power inline

Use the **show controllers power inline** user EXEC command to display the values in the registers of the specified Power over Ethernet (PoE) controller.

```
show controllers power inline [instance] [module switch-number] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>instance</i>	(Optional) Power controller instance, where each instance corresponds to four ports. See the “Usage Guidelines” section for more information. If no instance is specified, information for all instances appear.
<b>module</b> <i>switch number</i>	(Optional) Limit the display to ports on the specified stack member. The switch number is 1 to 9.
<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
12.1(19)EA1	This command was introduced.

## Usage Guidelines

For the Catalyst 3750-48PS switches, the *instance* range is 0 to 11.

For the Catalyst 3750-24PS switches, the *instance* range is 0 to 5.

For the Catalyst 3750G-48PS switches, the *instance* range is 0 to 2. For instances other than 0 to 2, the switches provides no output.

For the Catalyst 3750G-24PS switches, the *instance* range is 0 to 1. For instances other than 0 to 1, the switches provides no output.

Though visible on all switches, this command is valid only for PoE switches. It provides no information for switches that do not support PoE.

The output 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 power inline** command on a switch other than a Catalyst 3750G-48PS or 3750G-24PS switch:

```
Switch> show controllers power inline
Module 1, Controller Instance 0, Address 0x40
  Interrupt      Reg 0x0 = 0x0
  Intr Mask     Reg 0x1 = 0xF6
  Power Event   Reg 0x2 = 0x0
  Detect Event  Reg 0x4 = 0x0
  Fault Event   Reg 0x6 = 0x0
  T-Start Event Reg 0x8 = 0x0
  Supply Event  Reg 0xA = 0x0
  Port 1 Status Reg 0xC = 0x24
  Port 2 Status Reg 0xD = 0x24
  Port 3 Status Reg 0xE = 0x3
  Port 4 Status Reg 0xF = 0x3
  Power Status  Reg 0x10 = 0xFF
  Pin Status    Reg 0x11 = 0x0
  Operating Mode Reg 0x12 = 0xAA
  Disconnect Enable Reg 0x13 = 0xA0
  Detect/Class Enable Reg 0x14 = 0xFF
  Reserved      Reg 0x15 = 0x0
  Timing Config Reg 0x16 = 0x2
  Misc Config   Reg 0x17 = 0xA0
  ID Revision   Reg 0x1A = 0x64
```

```
Module 1, Controller Instance 1, Address 0x42
<output truncated>
```

This is an example of output from the **show controllers power inline** command on a Catalyst 3750G-24PS switch:

```
Alchemy instance 0, address 0
Pending event flag :N N N N N N N N N N N
Current State      :00 05 10 51 61 11
Current Event      :00 01 00 10 40 00
Timers             :00 C5 57 03 12 20 04 B2 05 06 07 07
Error State        :00 00 00 00 10 00
Error Code         :00 00 00 00 00 00 00 00 00 00 00 00
Power Status       :N Y N N Y N N N N N N
Auto Config        :N Y Y N Y Y Y Y Y Y Y
Disconnect         :N N N N N N N N N N N
Detection Status   :00 00 00 30 00 00
Current Class      :00 00 00 30 00 00
Tweetie debug      :00 00 00 00
POE Commands pending at sub:
  Command 0 on each port :00 00 00 00 00 00
  Command 1 on each port :00 00 00 00 00 00
  Command 2 on each port :00 00 00 00 00 00
  Command 3 on each port :00 00 00 00 00 00
```

**Related Commands**

Command	Description
<a href="#">logging event</a>	Enables the logging of PoE events.
<a href="#">power-inline-status</a>	
<a href="#">power inline</a>	Configures the power management mode for the specified PoE port or for all PoE ports.
<a href="#">show power inline</a>	Displays the PoE status for the specified PoE port or for all PoE ports.

# 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
	12.1(11)AX	This command was introduced.
	12.1(14)EA1	The <b>asic [number]</b> keywords were added.

**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
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(25)SE	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 controllers utilization</b> command.

```
Switch> show controllers utilization
Port          Receive Utilization  Transmit Utilization
Fa1/0/1       0                    0
Fa1/0/2       0                    0
Fa1/0/3       0                    0
Fa1/0/4       0                    0
Fa1/0/5       0                    0
Fa1/0/6       0                    0
Fa1/0/7       0                    0
```

<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 gigabitethernet1/0/1 utilization
Receive Bandwidth Percentage Utilization : 0
Transmit Bandwidth Percentage Utilization : 0
```

**Table 2-21** *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 dot1q-tunnel

Use the **show dot1q-tunnel** user EXEC command to display information about 802.1Q tunnel ports.

```
show dot1q-tunnel [interface interface-id] [ | { begin | exclude | include } expression]
```

Syntax Description	
<b>interface</b> <i>interface-id</i>	(Optional) Specify the interface for which to display 802.1Q tunneling information. 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(25)EA1	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** These are examples of output from the **show dot1q-tunnel** command:

```
Switch> show dot1q-tunnel
dot1q-tunnel mode LAN Port(s)
-----
Gi1/0/1
Gi1/0/2
Gi1/0/3
Gi1/0/6
Po2

Switch> show dot1q-tunnel interface gigabitethernet1/0/1
dot1q-tunnel mode LAN Port(s)
-----
Gi1/0/1
```

Related Commands	Command	Description
	<b>show vlan dot1q tag native</b>	Displays 802.1Q native VLAN tagging status.
	<b>switchport mode dot1q-tunnel</b>	Configures an interface as an 802.1Q tunnel port.



# show dot1x

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

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

Syntax Description		
<b>all</b>	(Optional) Display the 802.1x status for all ports.	
<b>interface</b> <i>interface-id</i>	(Optional) Display the 802.1x status for the specified port (including type, stack member, module, and port number).	
<b>statistics interface</b> <i>interface-id</i>	(Optional) Display 802.1x statistics for the specified port (including type, stack member, 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
	12.1(11)AX	This command was introduced.
	12.1(14)EA1	The <b>all</b> keyword was added.

**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.

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** and the **show dot1x all** privileged EXEC commands:

```
Switch# show dot1x
Sysauthcontrol                = Enabled
Supplicant Allowed In Guest Vlan = Disabled
Dot1x Protocol Version        = 1
Dot1x Oper Controlled Directions = Both
Dot1x Admin Controlled Directions = Both

Switch# show dot1x all
Dot1x Info for interface GigabitEthernet1/0/1
-----
Supplicant MAC 00d0.b71b.35de
  AuthSM State      = CONNECTING
  BendSM State      = IDLE
```

```

PortStatus      = UNAUTHORIZED
MaxReq          = 2
HostMode        = Single
Port Control    = Auto
QuietPeriod     = 60 Seconds
Re-authentication = Disabled
ReAuthPeriod   = 3600 Seconds
ServerTimeout   = 30 Seconds
SuppTimeout     = 30 Seconds
TxPeriod        = 30 Seconds
Guest-Vlan      = 0

```

Dot1x Info for interface GigabitEthernet1/0/2

```

-----
PortStatus      = UNAUTHORIZED
MaxReq          = 2
HostMode        = Multi
Port Control    = Auto
QuietPeriod     = 60 Seconds
Re-authentication = Disabled
ReAuthPeriod   = 3600 Seconds
ServerTimeout   = 30 Seconds
SuppTimeout     = 30 Seconds
TxPeriod        = 30 Seconds
Guest-Vlan      = 0

```

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

```

Switch# show dot1x interface gigabitethernet1/0/1
Supplicant MAC 00d0.b71b.35de
  AuthSM State      = AUTHENTICATED
  BendsM State      = IDLE
PortStatus          = AUTHORIZED
MaxReq              = 2
HostMode            = Single
Port Control        = Auto
QuietPeriod         = 60 Seconds
Re-authentication   = Disabled
ReAuthPeriod       = 3600 Seconds
ServerTimeout       = 30 Seconds
SuppTimeout         = 30 Seconds
TxPeriod            = 30 Seconds
Guest-Vlan          = 0

```

This is an example of output from the **show dot1x statistics interface *interface-id*** command. [Table 2-22](#) describes the fields in the display.

```

Switch# show dot1x statistics interface gigabitethernet1/0/1
PortStatistics Parameters for Dot1x
-----
TxReqId = 15   TxReq = 0       TxTotal = 15
RxStart  = 4   RxLogoff = 0     RxRespId = 1   RxResp = 1
RxInvalid = 0  RxLenErr = 0     RxTotal = 6
RxVersion = 1  LastRxSrcMac 00d0.b71b.35de

```

**Table 2-22** *show dot1x statistics Field Descriptions*

Field	Description
TxReqId	Number of Extensible Authentication Protocol (EAP)-request/identity frames that have been sent.
TxReq	Number of EAP-request frames (other than request/identity frames) that have been sent.
TxTotal	Number of Extensible Authentication Protocol over LAN (EAPOL) frames of any type that have been sent.
RxStart	Number of valid EAPOL-start frames that have been received.
RxLogoff	Number of EAPOL-logoff frames that have been received.
RxRespId	Number of EAP-response/identity frames that have been received.
RxResp	Number of valid EAP-response frames (other than 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.
RxVersion	Number of received packets in the 802.1x Version 1 format.
LastRxSrcMac	Source MAC address carried in the most recently received EAPOL frame.

**Related Commands**

Command	Description
<a href="#">dot1x default</a>	Resets the configurable 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, stack member, 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
12.1(11)AX	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 gigabitethernet1/0/1
DTP information for GigabitEthernet1/0/1:
  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
```

```

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, 3160 software encap isl, 0 isl hardware 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**

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

# show env

Use the **show env** user EXEC command to display fan, temperature, redundant power system (RPS) availability, and power information for the switch being accessed (standalone switch or stack master or stack member). Use with the **stack** keyword to display all information for the stack or for a specified switch in the stack.

```
show env {all | fan | power | rps | stack [switch-number] | temperature [status]} [ | {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>stack</b> [switch-number]		Display all environmental status for each switch in the stack or for the specified switch. The range is 1 to 9, depending on the switch member numbers in the stack.
<b>temperature</b>		Display the switch temperature status.
<b>status</b>		(Optional) Display the switch internal temperature (not the external temperature) and the threshold values. This keyword is available only on the Catalyst 3750G-48TS, 3750G-48PS, 3750G-24TS-1U, and 3750G-24PS switches.
<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
	12.1(11)AX	This command was introduced.
	12.2(20)SE3	The <b>temperature status</b> keyword was added.

**Usage Guidelines** Use the **show access-lists** privileged EXEC command to access information from a specific switch other than the master.

You can use the **show env stack** [switch-number] command to display information about any switch in the stack from any member switch.

Though visible on all switches, the **show env temperature status** command is valid only for the Catalyst 3750G-48TS, 3750G-48PS, 3750G-24TS-1U, and 3750G-24PS switches. If you enter this command on these switches, the command output shows the switch temperature states and the threshold levels. If you enter the command on a switch other than these four switches, the output field shows *Not Applicable*.

On a Catalyst 3750G-48PS or 3750G-24PS switch, you can also use the **show env temperature** command to display the switch temperature status. The command output shows the green and yellow states as *OK* and the red state as *FAULTY*. If you enter the **show env all** command on this switch, the command output is the same as the **show env temperature status** command output.

For more information about the threshold levels, see the software configuration guide for this release.

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 entered from the master switch or a standalone switch:

```
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
```

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

```
Switch> show env stack
SWITCH: 1
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
SWITCH: 2
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
SWITCH: 3
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
SWITCH: 4
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
SWITCH: 5
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
SWITCH: 6
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
```

This example shows how to display information about stack member 3 from the master switch:

```
Switch> show env stack 3
SWITCH: 3
FAN is OK
TEMPERATURE is OK
POWER is OK
RPS is NOT PRESENT
```

This example shows how to display the temperature value, state, and the threshold values. [Table 2-23](#) describes the temperature states in the command output.

```
Switch> show env temperature status
Temperature Value:28 Degree Celsius
Temperature State:GREEN
Yellow Threshold :70 Degree Celsius
Red Threshold    :75 Degree Celsius
```

**Table 2-23 States in the show env temperature status Command Output**

State	Description
Green	The switch temperature is in the <i>normal</i> operating range.
Yellow	The temperature is in the <i>warning</i> range. You should check the external temperature around the switch.
Red	The temperature is in the <i>critical</i> range. The switch might not run properly if the temperature is in this range.



# show errdisable detect

Use the **show errdisable detect** user EXEC command to display error-disable 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
	12.1(11)AX	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.

A displayed `gbic-invalid` error reason refers to an invalid small form-factor pluggable (SFP) module.

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

```
Switch> show errdisable detect
ErrDisable Reason    Detection status
-----
udld                  Enabled
bpduguard             Enabled
security-violatio    Enabled
channel-misconfig    Enabled
psecure-violation    Enabled
vmps                  Enabled
loopback              Enabled
pagp-flap             Enabled
dtp-flap              Enabled
l2ptguard             Enabled
link-flap             Enabled
gbic-invalid          Enabled
dhcp-rate-limit      Enabled
unicast-flood         Enabled
storm-control         Enabled
ilpower               Enabled
arp-inspection        Enabled
```



**Note**

Though visible in the output, the `ilpower`, `storm-control`, and `unicast-flood` fields are not valid.

■ show errdisable detect

Related Commands	Command	Description
	<a href="#">errdisable detect cause</a>	Enables error-disable 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-disable 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
	12.1(11)AX	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-disable detection for a specific cause or all causes.
	<a href="#">show errdisable detect</a>	Displays error-disable detection status.
	<a href="#">show errdisable recovery</a>	Displays error-disable 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-disable 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
	12.1(11)AX	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.

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

**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
l2ptguard              Disabled
link-flap              Enabled
psecure-violation     Disabled
gbic-invalid           Disabled
dhcp-rate-limit       Disabled
unicast-flood         Disabled
storm-control         Disabled
arp-inspection        Disabled
loopback               Disabled

Timer interval:300 seconds
```

## show errdisable recovery

Interfaces that will be enabled at the next timeout:

Interface	Errdisable reason	Time left(sec)
Gi1/0/2	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 48.
<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
	12.1(11)AX	This command was introduced.
	12.1(14)EA1	The <b>protocol</b> keyword was added.
	12.2(25)SE	The <i>channel-group-number</i> range was changed from 1 to 12 to 1 to 48.

**Usage Guidelines**

If you do not specify a *channel-group*, all channel groups are displayed.

In the output, the Passive port list field is displayed only for Layer 3 port channels. This field means that the physical port, which is still not up, is configured to be in the channel group (and indirectly is in the only port channel in the channel group).

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 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
```

## show etherchannel

```

Ports in the group:
-----
Port: Gi1/0/1
-----

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
Gi1/0/1   SA     bndl      32768      0x1     0x1    0x101  0x3D
Gi1/0/2   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   Gi1/0/1   Active        0
  0     00   Gi1/0/2   Active        0

Time since last port bundled: 01d:20h:20m:20s  Gi1/0/2

```

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      Gi1/0/1 (P)  Gi1/0/2 (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   Gi1/0/1   Active        0
   0    00   Gi1/0/2   Active        0

Time since last port bundled:  01d:20h:24m:44s  Gi1/0/2
```

This is an example of output from **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 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 specified stack member. The range is from 1 to 9. 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
	12.1(14)EA1	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. For a standalone switch, 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
-----
Gi2/0/1      Unsupp.  Unsupp.  off     off     0       0
Gi2/0/2      desired  off      off     off     0       0
Gi2/0/3      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 gigabitethernet2/0/2
Port      Send FlowControl  Receive FlowControl  RxPause  TxPause
          admin    oper    admin    oper
-----
Gi2/0/2  desired off    off    off    0      0
```

#### Related Commands

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

# show idprom

Use the **show idprom** user EXEC command to display the IDPROM information for the specified interface.

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

Syntax Description	Parameter	Description
	<b>interface</b> <i>interface-id</i>	Display the IDPROM information for the specified 10-Gigabit Ethernet interface.
	<b>detail</b>	(Optional) Display detailed hexadecimal IDPROM 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(20)SE1	This command was introduced.

**Usage Guidelines** This command applies only to 10-Gigabit Ethernet interfaces. 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 idprom interface tengigabitethernet1/0/1** command for the 10-Gigabit Ethernet interface. It shows the XENPAK module serial EEPROM contents.

For information about the EEPROM map and the field descriptions for the display, see the XENPAK multisource agreement (MSA) at these sites:

[http://www.xenpak.org/MSA/XENPAK\\_MSA\\_R2.1.pdf](http://www.xenpak.org/MSA/XENPAK_MSA_R2.1.pdf)

[http://www.xenpak.org/MSA/XENPAK\\_MSA\\_R3.0.pdf](http://www.xenpak.org/MSA/XENPAK_MSA_R3.0.pdf)

To determine which version of the XENPAK documentation to read, check the *XENPAK MSA Version supported* field in the display. Version 2.1 is 15 hexadecimal, and Version 3.0 is 1E hexadecimal (not shown in the example).

```
Switch# show idprom interface tengigabitethernet1/0/1
TenGigabitEthernet1/0/1 (gpn:472, port-number:1)
```

```
-----
XENPAK Serial EEPROM Contents:
Non-Volatile Register (NVR) Fields
  XENPAK MSA Version supported      :0x15
  NVR Size in bytes                :0x100
  Number of bytes used             :0xD0
  Basic Field Address              :0xB
```

```

Customer Field Address          :0x77
Vendor Field Address           :0xA7
Extended Vendor Field Address  :0x100
Reserved                       :0x0
Transceiver type               :0x1 =XENPAK
Optical connector type         :0x1 =SC
Bit encoding                   :0x1 =NRZ
Normal BitRate in multiple of 1M b/s :0x2848
Protocol Type                  :0x1 =10GgE

Standards Compliance Codes :
10GbE Code Byte 0              :0x2 =10GBASE-LR
10GbE Code Byte 1              :0x0
SONET/SDH Code Byte 0         :0x0
SONET/SDH Code Byte 1         :0x0
SONET/SDH Code Byte 2         :0x0
SONET/SDH Code Byte 3         :0x0
10GFC Code Byte 0             :0x0
10GFC Code Byte 1             :0x0
10GFC Code Byte 2             :0x0
10GFC Code Byte 3             :0x0
Transmission range in 10m     :0x3E8

Fibre Type :
Fibre Type Byte 0             :0x40 =NDSF only
Fibre Type Byte 1             :0x0 =Unspecified

Centre Optical Wavelength in 0.01nm steps - Channel 0 :0x1 0xFF 0xB8
Centre Optical Wavelength in 0.01nm steps - Channel 1 :0x0 0x0 0x0
Centre Optical Wavelength in 0.01nm steps - Channel 2 :0x0 0x0 0x0
Centre Optical Wavelength in 0.01nm steps - Channel 3 :0x0 0x0 0x0
Package Identifier OUI        :0x41F420
Transceiver Vendor OUI       :0x3400871
Transceiver vendor name      :CISCO-OPNEXT, INC
Part number provided by transceiver vendor          :800-24558-01
Revision level of part number provided by vendor    :01
Vendor serial number         :ONJ0735003U
Vendor manufacturing date code :2003082700

Reserved1 :00 00 00 00 00 00 00
Basic Field Checksum :0x6C

Customer Writable Area :
0x00:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x10:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Vendor Specific :
0x00:41 00 20 F4 88 84 28 94 C0 00 30 14 06 39 00 D9
0x10:03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x30:00 00 00 00 11 5E 19 E9 BF 1B AD 98 03 9B DF 87
0x40:CC F6 45 FF 99 00 00 00 00 00 00 00 00 00 C0 48
0x50:46 D2 00 00 00 00 00 00 00

```

**Related Commands**

Command	Description
<a href="#">show controllers ethernet-controller</a>	Displays per-interface send and receive statistics read from the hardware, interface internal registers, or port ASIC information.

# 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 | private-vlan mapping | pruning | stats
| status [err-disabled] | switchport [backup | module number] | transceiver [properties |
detail] [module number] | trunk] [ | { begin | exclude | include } expression ]
```

The **show interfaces private-vlan mapping** command is available only if your switch is running the enhanced multilayer image (EMI).

## Syntax Description

<i>interface-id</i>	(Optional) Valid interfaces include physical ports (including type, stack member, module, and port number) and port channels. The port-channel range is 1 to 48.
<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>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 specified stack member. The range is from 1 to 9. This option is not available if you have entered a specific interface ID.
<b>counters</b>	(Optional) See the <a href="#">show interfaces counters</a> 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>private-vlan mapping</b>	(Optional) Display private-VLAN mapping information for the VLAN switch virtual interfaces (SVIs). This keyword is available only if your switch is running the EMI.
<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 (nonrouting) 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 stack.

<b>transceiver [detail   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, duplex, and inline power 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.

1. coarse wavelength-division multiplexer
2. 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
12.1(11)AX	This command was introduced.
12.1(14)EA1	Support for the <b>capabilities</b> keyword was added.
12.2(20)SE	The <b>private-vlan mapping</b> , <b>backup</b> , <b>transceiver calibration</b> , <b>detail</b> , and <b>properties</b> , keywords were added.
12.2(25)SEA	The <b>calibration</b> keyword was removed.

**Usage Guidelines**

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

- Use the **show interface capabilities module number** command to display the capabilities of all interfaces on that switch in the stack. If there is no switch with that module number in the stack, there is no output.
- 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 in the stack.
- Use the **show interface switchport module number** command to display the switch port characteristics of all interfaces on that switch in the stack. If there is no switch with that module number in the stack, there is no output.

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 on stack member 3:

```
Switch# show interfaces gigabitethernet3/0/2
GigabitEthernet3/0/2 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 interface" 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.

GigabitEthernet1/0/1
      Protocol  Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.
GigabitEthernet1/0/2
      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 gigabitethernet1/0/2 capabilities
GigabitEthernet1/0/2
  Model: WS-C3750G-24TS
  Type: 10/100/1000BaseTX
  Speed: 10,100,1000,auto
  Duplex: full,auto
  Trunk encaps. type: 802.1Q,ISL
  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
Dot1x:                  yes

```

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 gigabitethernet1/0/2 description
Interface Status      Protocol Description
Gi1/0/2      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 private-vlan mapping** command when the private-VLAN primary VLAN is VLAN 10 and the secondary VLANs are VLANs 501 and 502:

```

Switch# show interfaces private-vlan mapping
Interface Secondary VLAN Type
-----
vlan10    501          isolated
vlan10    502          community

```

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 gigabitethernet1/0/2 pruning
Port      Vlans pruned for lack of request by neighbor
Gi1/0/2   3,4

Port      Vlans traffic requested of neighbor
Gi1/0/2   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
Fa1/0/1                      connected   routed    a-half  a-100  10/100BaseTX
Fa1/0/2                      notconnect  121,40    auto    auto    10/100BaseTX
Fa1/0/3                      notconnect  1         auto    auto    10/100BaseTX
Fa1/0/4                      notconnect  18        auto    auto    Not Present
Fa1/0/5   connected           121       a-full   a-1000 10/100BaseTX
Fa1/0/6   connected           122,11    a-full   a-1000 10/100BaseTX

<output truncated>
Gi1/0/1                      notconnect  1         auto    auto    10/100/1000BaseTX
Gi1/0/2                      notconnect  1         auto    auto    unsupported

<output truncated>
```

These are examples of output from the **show interfaces status** command for a specific interface when private VLANs are configured. Port 22 is configured as a private-VLAN host port. It is associated with primary VLAN 20 and secondary VLAN 25.

```
Switch# show interfaces fastethernet1/0/22 status
Port      Name                Status      Vlan      Duplex  Speed Type
Fa1/0/22                      connected   20,25     a-full   a-100  10/100BaseTX
```

In this example, port 20 is configured as a private-VLAN promiscuous port. The display shows only the primary VLAN 20.

```
Switch# show interfaces fastethernet1/0/20 status
Port      Name                Status      Vlan      Duplex  Speed Type
Fa1/0/20                      connected   20        a-full   a-100  10/100BaseTX
```

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
Gi2/0/26                      err-disabled  gbic-invalid
```

This is an example of output from the **show interfaces switchport** command for a single port. [Table 2-24](#) describes the fields in the display.



#### Note

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

```
Switch# show interfaces gigabitethernet1/0/1 switchport
Name: Gi1/0/1
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 2-24** *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.
Administrative private-vlan host-association	Displays the administrative VLAN association for private-VLAN host ports.
Administrative private-vlan mapping	Displays the administrative VLAN mapping for private-VLAN promiscuous ports.

**Table 2-24** *show interfaces switchport Field Descriptions (continued)*

Field	Description
Operational private-vlan	Displays the operational private-VLAN status.
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** command for a port configured as a private VLAN promiscuous port. The primary VLAN 20 is mapped to secondary VLANs 25, 30 and 35:

```
Switch# show interface gigabitethernet1/0/2 switchport
Name: Gi1/0/2
Switchport: Enabled
Administrative Mode: private-vlan promiscuous
Operational Mode: private-vlan promiscuous
Administrative Trunking Encapsulation: negotiate
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Administrative Native VLAN tagging: enabled
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: 20 (VLAN0020) 25 (VLAN0025) 30 (VLAN0030) 35
(VLAN0035)
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk Native VLAN tagging: enabled
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan:
20 (VLAN0020) 25 (VLAN0025)
30 (VLAN0030)
35 (VLAN0035)

<output truncated>
```

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

```
Switch# show interface switchport backup
Switch Backup Interface Pairs:
  Active Interface      Backup Interface      State
  -----
  Fa1/0/1              Fa1/0/2              Active Up/Backup Standby
  Fa3/0/3              Fa4/0/5              Active Down/Backup Up
  Po1                  Po2                  Active Standby/Backup Up
```

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

```
Switch# show interfaces gigabitethernet1/0/2 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 gigabitethernet1/0/1 trunk
Port      Mode      Encapsulation  Status      Native vlan
Gi1/0/1   auto      negotiate      trunking    1

Port      Vlans allowed on trunk
Gi1/0/1   1-4094
```

```

Port          Vlans allowed and active in management domain
Gi1/0/1      1-4

Port          Vlans in spanning tree forwarding state and not pruned
Gi1/0/1      1-4

```

This is an example of output from the **show interfaces transceiver properties** command. If you do not specify an interface, the output of the command shows the status on all switch ports:

```

Switch# show interfaces transceiver properties
Name : Gi1/0/1
Administrative Speed: auto
Operational Speed: auto
Administrative Duplex: auto
Administrative Power Inline: enable
Operational Duplex: auto
Administrative Auto-MDIX: off
Operational Auto-MDIX: off

Name : Gi1/0/2
Administrative Speed: auto
Operational Speed: auto
Administrative Duplex: auto
Administrative Power Inline: enable
Operational Duplex: auto
Administrative Auto-MDIX: off
Operational Auto-MDIX: off

Name : Gi1/0/3
Administrative Speed: auto
Operational Speed: auto
Administrative Duplex: auto
Administrative Power Inline: disable
Operational Duplex: auto
Administrative Auto-MDIX: off
Operational Auto-MDIX: off

<output truncated>

```

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

```

Switch# show interfaces gigabitethernet1/0/1 transceiver properties
Name : Gi1/0/1
Administrative Speed: auto
Administrative Duplex: auto
Administrative Auto-MDIX: on
Administrative Power Inline: enable
Operational Speed: auto
Operational Duplex: auto
Operational Auto-MDIX: on

```

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

```

Switch# show interfaces gigabitethernet2/0/3 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.

          High Alarm High Warn Low Warn Low Alarm
          Threshold Threshold Threshold Threshold
Port      (Celsius)   (Celsius) (Celsius) (Celsius) (Celsius)

```

## show interfaces

```

-----
Gi2/0/3 41.5          110.0    103.0    -8.0     -12.0

          Voltage          High Alarm High Warn Low Warn  Low Alarm
Port      (Volts)          Threshold Threshold Threshold Threshold
-----
Gi2/0/3 3.20          4.00     3.70     3.00     2.95

          Current          High Alarm High Warn Low Warn  Low Alarm
Port      (milliamperes)  Threshold Threshold Threshold Threshold
-----
Gi2/0/3 31.0          84.0     70.0     4.0      2.0

          Optical          High Alarm High Warn Low Warn  Low Alarm
Port      Transmit Power    Threshold Threshold Threshold Threshold
          (dBm)          (dBm)    (dBm)    (dBm)    (dBm)
-----
Gi2/0/3 -0.0 ( -0.0)    -0.0     -0.0     -0.0     -0.0

          Optical          High Alarm High Warn Low Warn  Low Alarm
Port      Receive Power    Threshold Threshold Threshold Threshold
          (dBm)          (dBm)    (dBm)    (dBm)    (dBm)
-----
Gi2/0/3 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 backup interface</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 mode private-vlan</a>	Configures a port as a private-VLAN host or a promiscuous port.
<a href="#">switchport private-vlan</a>	Defines private-VLAN association for a host port or private-VLAN mapping for a promiscuous 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 | module switch-number | protocol status | trunk] [ | {begin | exclude | include} expression]
```

Syntax Description		
<i>interface-id</i>	(Optional) ID of the physical interface, including type, stack member, 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>module</b> <i>switch-number</i>	(Optional) Display counters for the specified stack member. The range is from 1 to 9, depending upon the switch numbers in the stack.	
	<b>Note</b> In this command, the <b>module</b> keyword refers to the stack member number (1 to 9). The module number that is part of the interface ID is always zero.	
<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
	12.1(11)AX	This command was introduced.
	12.2(25)SE	The <b>etherchannel</b> and <b>protocol status</b> keywords were added. The <b>broadcast</b> , <b>multicast</b> , and <b>unicast</b> keywords were removed.

### 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
Gi1/0/1       0           0            0            0
Gi1/0/2       0           0            0            0
```

<output truncated>

This is an example of partial output from the **show interfaces counters module** command for stack member 2. It displays all counters for the specified switch in the stack.

```
Switch# show interfaces counters module 2
Port          InOctets    InUcastPkts  InMcastPkts  InBcastPkts
Fa2/0/1       520         2            0            0
Fa2/0/2       520         2            0            0
Fa2/0/3       520         2            0            0
Fa2/0/4       520         2            0            0
Fa2/0/5       520         2            0            0
Fa2/0/6       520         2            0            0
Fa2/0/7       520         2            0            0
Fa2/0/8       520         2            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
FastEthernet1/0/1: Other, IP, ARP, CDP
FastEthernet1/0/2: Other, IP
FastEthernet1/0/3: Other, IP
FastEthernet1/0/4: Other, IP
FastEthernet1/0/5: Other, IP
FastEthernet1/0/6: Other, IP
FastEthernet1/0/7: Other, IP
FastEthernet1/0/8: Other, IP
FastEthernet1/0/9: Other, IP
FastEthernet1/0/10: 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
Gi1/0/1       0              0              0
Gi1/0/2       0              0              0
Gi1/0/3       80678         4155           0
```



```
Gi1/0/4          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 ip arp inspection

Use the **show ip arp inspection** privileged EXEC command to display the configuration and the operating state of dynamic Address Resolution Protocol (ARP) inspection or the status of this feature for all VLANs or for the specified interface or VLAN.

```
show ip arp inspection [interfaces [interface-id] | log | statistics [vlan vlan-range] | vlan
vlan-range] [ | {begin | exclude | include} expression]
```

This command is available only if your switch is running the enhanced multilayer image (EMI).

Syntax Description	
<b>interfaces</b> <i>[interface-id]</i>	(Optional) Display the trust state and the rate limit of ARP packets for the specified interface or all interfaces. Valid interfaces include physical ports and port channels.
<b>log</b>	(Optional) Display the configuration and contents of the dynamic ARP inspection log buffer.
<b>statistics</b> [ <b>vlan</b> <i>vlan-range</i> ]	(Optional) Display statistics for forwarded, dropped, MAC validation failure, IP validation failure, access control list (ACL) permitted and denied, and DHCP permitted and denied packets for the specified VLAN. If no VLANs are specified or if a range is specified, display information only for VLANs with dynamic ARP inspection enabled (active).  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>vlan</b> <i>vlan-range</i>	(Optional) Display the configuration and the operating state of dynamic ARP inspection for the specified VLAN. If no VLANs are specified or if a range is specified, display information only for VLANs with dynamic ARP inspection enabled (active).  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** Privileged EXEC

Command History	Release	Modification
	12.2(20)SE	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 ip arp inspection interfaces** command:

```
Switch# show ip arp inspection interfaces
Interface          Trust State      Rate (pps)      Burst Interval
-----
Gi1/0/1            Untrusted        15              1
Gi1/0/2            Untrusted        15              1
Gi1/0/3            Untrusted        15              1
```

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

```
Switch# show ip arp inspection interfaces gigabitethernet1/0/1
Interface          Trust State      Rate (pps)      Burst Interval
-----
Gi1/0/1            Untrusted        15              1
```

This is an example of output from the **show ip arp inspection log** command. It shows the contents of the log buffer before the buffers are cleared:

```
Switch# show ip arp inspection log
Total Log Buffer Size : 32
Syslog rate : 10 entries per 300 seconds.

Interface  Vlan  Sender MAC      Sender IP      Num Pkts  Reason      Time
-----
Gi1/0/1   5     0003.0000.d673  192.2.10.4    5         DHCP Deny   19:39:01 UTC
Mon Mar 1 1993
Gi1/0/1   5     0001.0000.d774  128.1.9.25    6         DHCP Deny   19:39:02 UTC
Mon Mar 1 1993
Gi1/0/1   5     0001.c940.1111  10.10.10.1    7         DHCP Deny   19:39:03 UTC
Mon Mar 1 1993
Gi1/0/1   5     0001.c940.1112  10.10.10.2    8         DHCP Deny   19:39:04 UTC
Mon Mar 1 1993
Gi1/0/1   5     0001.c940.1114  173.1.1.1     10        DHCP Deny   19:39:06 UTC
Mon Mar 1 1993
Gi1/0/1   5     0001.c940.1115  173.1.1.2     11        DHCP Deny   19:39:07 UTC
Mon Mar 1 1993
Gi1/0/1   5     0001.c940.1116  173.1.1.3     12        DHCP Deny   19:39:08 UTC
Mon Mar 1 1993
```

If the log buffer overflows, it means that a log event does not fit into the log buffer, and the display for the **show ip arp inspection log** privileged EXEC command is affected. A -- in the display appears in place of all data except the packet count and the time. No other statistics are provided for the entry. If you see this entry in the display, increase the number of entries in the log buffer, or increase the logging rate in the **ip arp inspection log-buffer** global configuration command.

This is an example of output from the **show ip arp inspection statistics** command. It shows the statistics for packets that have been processed by dynamic ARP inspection for all active VLANs.

```
Switch# show ip arp inspection statistics
Vlan      Forwarded      Dropped      DHCP Drops      ACL Drops
-----
5         3              4618         4605            4
2000     0              0            0              0
```

## show ip arp inspection

```

Vlan    DHCP Permits    ACL Permits    Source MAC Failures
----    -
5       0                12             0
2000    0                0              0

```

```

Vlan    Dest MAC Failures    IP Validation Failures
----    -
5       0                    9
2000    0                    0

```

For the **show ip arp inspection statistics** command, the switch increments the number of forwarded packets for each ARP request and response packet on a trusted dynamic ARP inspection port. The switch increments the number of ACL or DHCP permitted packets for each packet that is denied by source MAC, destination MAC, or IP validation checks, and the switch increments the appropriate failure count.

This is an example of output from the **show ip arp inspection statistics vlan 5** command. It shows statistics for packets that have been processed by dynamic ARP for VLAN 5.

```

Switch# show ip arp inspection statistics vlan 5
Vlan    Forwarded    Dropped    DHCP Drops    ACL Drops
----    -
5       3            4618       4605          4

Vlan    DHCP Permits    ACL Permits    Source MAC Failures
----    -
5       0                12             0

Vlan    Dest MAC Failures    IP Validation Failures    Invalid Protocol Data
----    -
5       0                    9                          3

```

This is an example of output from the **show ip arp inspection vlan 5** command. It shows the configuration and the operating state of dynamic ARP inspection for VLAN 5.

```

Switch# show ip arp inspection vlan 5
Source Mac Validation      :Enabled
Destination Mac Validation :Enabled
IP Address Validation      :Enabled

Vlan    Configuration    Operation    ACL Match    Static ACL
----    -
5       Enabled          Active       second       No

Vlan    ACL Logging      DHCP Logging
----    -
5       Acl-Match       All

```

### Related Commands

Command	Description
<a href="#">arp access-list</a>	Defines an ARP ACL.
<a href="#">clear ip arp inspection log</a>	Clears the dynamic ARP inspection log buffer.
<a href="#">clear ip arp inspection statistics</a>	Clears the dynamic ARP inspection statistics.
<a href="#">ip arp inspection log-buffer</a>	Configures the dynamic ARP inspection logging buffer.
<a href="#">ip arp inspection vlan logging</a>	Controls the type of packets that are logged per VLAN.
<a href="#">show arp access-list</a>	Displays detailed information about ARP access lists.

# show ip dhcp snooping

Use the **show ip dhcp snooping** user EXEC command to display the DHCP snooping configuration.

## show ip dhcp snooping

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

**Command Modes** User EXEC

Command History	Release	Modification
	12.1(19)EA1	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 ip dhcp snooping** command.

```
Switch> show ip dhcp snooping
Switch DHCP snooping is enabled
DHCP snooping is configured on following VLANs:
40-42
Insertion of option 82 is enabled
Option 82 on untrusted port is allowed
Verification of hwaddr field is enabled
Interface                Trusted      Rate limit (pps)
-----                -
GigabitEthernet1/0/1    yes         unlimited
GigabitEthernet1/0/2    yes         unlimited
GigabitEthernet2/0/3    no          2000
GigabitEthernet2/0/4    yes         unlimited
```

Related Commands	Command	Description
	<a href="#">show ip dhcp snooping binding</a>	Displays the DHCP snooping binding information.

# show ip dhcp snooping binding

Use the **show ip dhcp snooping binding** user EXEC command to display the DHCP snooping binding database and configuration information for all interfaces on a switch.

```
show ip dhcp snooping binding [ip-address] [mac-address] [interface interface-id] [vlan vlan-id]
[ | {begin | exclude | include} expression]
```

## Syntax Description

<i>ip-address</i>	(Optional) Specify the binding entry IP address.
<i>mac-address</i>	(Optional) Specify the binding entry MAC address.
<b>interface</b> <i>interface-id</i>	(Optional) Specify the binding input interface.
<b>vlan</b> <i>vlan-id</i>	(Optional) Specify the binding entry VLAN.
<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
12.1(19)EA1	This command was introduced.
12.2(18)SE	The <b>dynamic</b> and <b>static</b> keywords were removed.

## Usage Guidelines

The **show ip dhcp snooping binding** command output shows only the dynamically configured bindings. Use the **show ip source binding** privileged EXEC command to display the dynamically and statically configured bindings in the DHCP snooping binding database.

If DHCP snooping is enabled and an interface changes to the down state, the switch does not delete the statically configured bindings.

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 example shows how to display the DHCP snooping binding entries for a switch:

```
Switch> show ip dhcp snooping binding
MacAddress          IpAddress      Lease(sec)  Type           VLAN  Interface
-----
01:02:03:04:05:06  10.1.2.150    9837        dhcp-snooping  20    GigabitEthernet2/0/1
00:D0:B7:1B:35:DE  10.1.2.151    237         dhcp-snooping  20    GigabitEthernet2/0/2
Total number of bindings: 2
```

This example shows how to display the DHCP snooping binding entries for a specific IP address:

```
Switch> show ip dhcp snooping binding 10.1.2.150
-----
MacAddress      IPAddress      Lease(sec)    Type           VLAN    Interface
-----
01:02:03:04:05:06  10.1.2.150    9810         dhcp-snooping  20     GigabitEthernet2/0/1
Total number of bindings: 1
```

This example shows how to display the DHCP snooping binding entries for a specific MAC address:

```
Switch> show ip dhcp snooping binding 0102.0304.0506
-----
MacAddress      IPAddress      Lease(sec)    Type           VLAN    Interface
-----
01:02:03:04:05:06  10.1.2.150    9788         dhcp-snooping  20     GigabitEthernet2/0/2
Total number of bindings: 1
```

This example shows how to display the DHCP snooping binding entries on a port:

```
Switch> show ip dhcp snooping binding interface gigabitethernet2/0/2
-----
MacAddress      IPAddress      Lease(sec)    Type           VLAN    Interface
-----
00:30:94:C2:EF:35  10.1.2.151    290          dhcp-snooping  20     GigabitEthernet2/0/2
Total number of bindings: 1
```

This example shows how to display the DHCP snooping binding entries on VLAN 20:

```
Switch> show ip dhcp snooping binding vlan 20
-----
MacAddress      IPAddress      Lease(sec)    Type           VLAN    Interface
-----
01:02:03:04:05:06  10.1.2.150    9747         dhcp-snooping  20     GigabitEthernet2/0/1
00:00:00:00:00:02  10.1.2.151    65           dhcp-snooping  20     GigabitEthernet2/0/2
Total number of bindings: 2
```

Table 2-25 describes the fields in the `show ip dhcp snooping binding` command output:

**Table 2-25** *show ip dhcp snooping binding Command Output*

Field	Description
MacAddress	Client hardware MAC address
IpAddress	Client IP address assigned from the DHCP server
Lease(sec)	Remaining lease time for the IP address
Type	Binding type
VLAN	VLAN number of the client interface
Interface	Interface that connects to the DHCP client host
Total number of bindings	Total number of bindings configured on the switch
	<b>Note</b> The command output might not show the total number of bindings. For example, if 200 bindings are configured on the switch and you stop the display before all the bindings appear, the total number does not change.

#### Related Commands

Command	Description
<a href="#">ip dhcp snooping binding</a>	Configures the DHCP snooping binding database
<a href="#">show ip dhcp snooping</a>	Displays the DHCP snooping configuration.

# show ip dhcp snooping database

Use the **show ip dhcp snooping database** user EXEC command to display the status of the DHCP snooping binding database agent.

**show ip dhcp snooping database [detail] [ | {begin | exclude | include} *expression* ]**

This command is available only if your switch is running the enhanced multilayer image (EMI).

## Syntax Description

<b>detail</b>	(Optional) Display detailed status and statistics 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(20)SE	This command was introduced.

## Examples

This is an example of output from the **show ip dhcp snooping database** command:

```
Switch> show ip dhcp snooping database
Agent URL :
Write delay Timer : 300 seconds
Abort Timer : 300 seconds

Agent Running : No
Delay Timer Expiry : Not Running
Abort Timer Expiry : Not Running

Last Succeeded Time : None
Last Failed Time : None
Last Failed Reason : No failure recorded.

Total Attempts      :          0   Startup Failures :          0
Successful Transfers :          0   Failed Transfers :          0
Successful Reads     :          0   Failed Reads     :          0
Successful Writes    :          0   Failed Writes    :          0
Media Failures       :          0
```

This is an example of output from the **show ip dhcp snooping database detail** command:

```
Switch# show ip dhcp snooping database detail
Agent URL : tftp://10.1.1.1/directory/file
Write delay Timer : 300 seconds
Abort Timer : 300 seconds

Agent Running : No
Delay Timer Expiry : 7 (00:00:07)
Abort Timer Expiry : Not Running
```



```

Last Succeeded Time : None
Last Failed Time : 17:14:25 UTC Sat Jul 7 2001
Last Failed Reason : Unable to access URL.

Total Attempts      :      21   Startup Failures :      0
Successful Transfers :      0   Failed Transfers :     21
Successful Reads    :      0   Failed Reads     :      0
Successful Writes   :      0   Failed Writes    :     21
Media Failures      :      0

First successful access: Read

Last ignored bindings counters :
Binding Collisions   :      0   Expired leases    :      0
Invalid interfaces   :      0   Unsupported vlans :      0
Parse failures       :      0

Last Ignored Time : None

Total ignored bindings counters:
Binding Collisions   :      0   Expired leases    :      0
Invalid interfaces   :      0   Unsupported vlans :      0
Parse failures       :      0

```

**Related Commands**

Command	Description
<a href="#">ip dhcp snooping</a>	Enables DHCP snooping on a VLAN.
<a href="#">ip dhcp snooping database</a>	Configures the DHCP snooping binding database agent or the binding file.
<a href="#">show ip dhcp snooping</a>	Displays DHCP snooping information.

# 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 ]
```

<b>Syntax Description</b>	<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.

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.1(11)AX	This command was introduced.

<b>Usage Guidelines</b>	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.
-------------------------	---

<b>Examples</b>	These are examples of output from the <b>show ip igmp profile</b> 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)	Display the IP address and incoming port for the IGMP query most recently received by the switch.
<b>vlan <i>vlan-id</i></b>	(Optional)	Specify a VLAN; the range is 1 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> .
<b><i>expression</i></b>		Expression in the output to use as a reference point.

## Command Modes

User EXEC

The **vlan *vlan-id*** keyword is available only in privileged EXEC mode.

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>querier</b> keyword was added.
12.2(18)SE	The <b>groups</b> keyword was added. The <b>show ip igmp snooping groups</b> command replaced the <b>show ip igmp snooping multicast</b> command.

## Usage Guidelines

Use this command to display snooping configuration for the switch or for a specific VLAN.

Although visible in the output display, output lines for topology change notification (TCN) and source-only learning are not valid.

Use the **show ip igmp snooping querier** command to display the IGMP version and IP address of a detected device that sends IGMP query messages, which is also called a *querier*. 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 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.

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

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
```

**Note**

TCN and source-only learning are not supported, and information appearing for these features is not valid.

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

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

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

<output truncated>
```

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              Gi1/0/1
2       172.20.40.20  v2              Router
```

# show ip igmp snooping querier detail

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

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(25)SEA	This command was introduced.

**Usage Guidelines** 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** only displays the IP address of the most recent device detected by the switch querier.

The **show ip igmp snooping querier command detail** displays the IP address of the most recent device detected by the switch querier along with 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 detail** command:

```
Switch> show ip igmp snooping querier detail

Vlan      IP Address      IGMP Version    Port
-----
1         1.1.1.1         v2              Fa8/0/1

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 Fa8/0/1
-----
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 and configures IGMP snooping on the switch or on a VLAN.
<a href="#">show ip igmp snooping</a>	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.
<a href="#">show ip igmp snooping</a>	Displays IGMP snooping multicast information for the switch or for the specified parameter.

## ■ show ip igmp snooping querier detail

Related Commands	Command	Description
	<a href="#">ip igmp snooping</a>	Enables and configures IGMP snooping on the switch or on a VLAN.
	<a href="#">show ip igmp snooping groups</a>	Displays IGMP snooping multicast router ports for the switch or for the specified multicast 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 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.
<b>ip_address</b>	(Optional) Display characteristics of the multicast group with the specified group IP address.
<i>vlan-id</i>	(Optional) Specify a 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** Privileged EXEC

Command History	Release	Modification
	12.2(18)SE	This command was introduced. It replaced the <b>show ip igmp snooping multicast</b> command.

**Usage Guidelines** Use this command to display multicast information or the multicast table.

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
-----
1         224.1.4.4      igmp
1         224.1.4.5      igmp
2         224.0.1.40     igmp      v2       Fa1/0/15
```

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       2/, Fa1/0/15
104       224.1.4.3      igmp      v2       2/, Fa1/0/15
```

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       2/, Fa1/0/15
```

**Related Commands**

Command	Description
<a href="#">ip igmp snooping</a>	Enables and configures IGMP snooping on the switch or on a VLAN.
<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 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 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
	12.1(11)AX	This command was introduced.

**Usage Guidelines** Use this command to display multicast router ports on the switch or for a specific VLAN. 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         Gi2/0/1(dynamic)
```

Related Commands	Command	Description
	<a href="#">ip igmp snooping</a>	Enables and configures IGMP snooping on the switch or on a VLAN.
	<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 detail

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

## show ip igmp snooping querier detail

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(25)SEA	This command was introduced.

Usage Guidelines	
	Use this command to display configuration and operation information for the switch querier.
	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 **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            Fa8/0/1

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 Fa8/0/1
-----
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 and configures IGMP snooping on the switch or on a VLAN.
<a href="#">show ip igmp snooping</a>	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.
<a href="#">show ip igmp snooping</a>	Displays IGMP snooping multicast information for the switch or for the specified parameter.

# show ip source binding

Use the **show ip source binding** user EXEC command to display the IP source bindings on the switch.

```
show ip source binding [ip-address] [mac-address] [dhcp-snooping | static] [interface
interface-id] [vlan vlan-id] [ | {begin | exclude | include} expression]
```

This command is available only if your switch is running the enhanced multilayer image (EMI).

## Syntax Description

<i>ip-address</i>	(Optional) Display IP source bindings for a specific IP address.
<i>mac-address</i>	(Optional) Display IP source bindings for a specific MAC address.
<b>dhcp-snooping</b>	(Optional) Display IP source bindings that were learned by DHCP snooping.
<b>static</b>	(Optional) Display static IP source bindings.
<b>interface</b> <i>interface-id</i>	(Optional) Display IP source bindings on a specific interface.
<b>vlan</b> <i>vlan-id</i>	(Optional) Display IP source bindings on a specific VLAN.
<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(20)SE	This command was introduced.

## Usage Guidelines

The **show ip source binding** command output shows the dynamically and statically configured bindings in the DHCP snooping binding database. Use the **show ip dhcp snooping binding** privileged EXEC command to display only the dynamically configured bindings.

## Examples

This is an example of output from the **show ip source binding** command:

```
Switch> show ip source binding
MacAddress          IpAddress      Lease(sec)  Type           VLAN  Interface
-----
00:00:00:0A:00:0B  11.0.0.1      infinite    static         10    GigabitEthernet1/0/1
00:00:00:0A:00:0A  11.0.0.2      10000      dhcp-snooping 10    GigabitEthernet1/0/1
```

## Related Commands

Command	Description
<a href="#">ip dhcp snooping binding</a>	Configures the DHCP snooping binding database.
<a href="#">ip source binding</a>	Configures static IP source bindings on the switch.

# show ip verify source

Use the **show ip verify source** user EXEC command to display the IP source guard configuration on the switch or on a specific interface.

**show ip verify source** [**interface** *interface-id*] [ | { **begin** | **exclude** | **include** } *expression*]

This command is available only if your switch is running the enhanced multilayer image (EMI).

Syntax Description	
<b>interface</b> <i>interface-id</i>	(Optional) Display IP source guard configuration on a specific interface.
<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(20)SE	This command was introduced.

**Examples** This is an example of output from the **show ip verify source** command:

```
Switch> show ip verify source
Interface  Filter-type  Filter-mode  IP-address  Mac-address  Vlan
-----
gil/0/1    ip           active       10.0.0.1    aaaa.bbbb.cccc  10
gil/0/1    ip           active       deny-all   aaaa.bbbb.cccd  11-20
gil/0/2    ip           inactive-trust-port
gil/0/3    ip           inactive-no-snooping-vlan
gil/0/4    ip-mac       active       10.0.0.2    aaaa.bbbb.cccc  10
gil/0/4    ip-mac       active       11.0.0.1    aaaa.bbbb.cccd  11
gil/0/4    ip-mac       active       deny-all   deny-all       12-20
gil/0/5    ip-mac       active       10.0.0.3    permit-all    10
gil/0/5    ip-mac       active       deny-all   permit-all     11-20
```

In the previous example, this is the IP source guard configuration:

- On the Gigabit Ethernet 1/0/1 interface, DHCP snooping is enabled on VLANs 10 to 20. For VLAN 10, IP source guard with IP address filtering is configured on the interface, and a binding exists on the interface. For VLANs 11 to 20, the second entry shows that a default port access control lists (ACLs) is applied on the interface for the VLANs on which IP source guard is not configured.
- The Gigabit Ethernet 1/0/2 interface is configured as trusted for DHCP snooping.
- On the Gigabit Ethernet 1/0/3 interface, DHCP snooping is not enabled on the VLANs to which the interface belongs.

## ■ show ip verify source

- On the Gigabit Ethernet 1/0/4 interface, IP source guard with source IP and MAC address filtering is enabled, and static IP source bindings are configured on VLANs 10 and 11. For VLANs 12 to 20, the default port ACL is applied on the interface for the VLANs on which IP source guard is not configured.
- On the Gigabit Ethernet 1/0/5 interface, IP source guard with source IP and MAC address filtering is enabled and configured with a static IP binding, but port security is disabled. The switch cannot filter source MAC addresses.

This is an example of output on an interface on which IP source guard is disabled:

```
Switch> show ip verify source gigabitethernet1/0/6
IP source guard is not configured on the interface gil/0/6.
```

### Related Commands

Command	Description
<a href="#">ip verify source</a>	Enables IP source guard on an interface.



# show ipc

Use the **show ipc** user EXEC command to display Interprocess Communications Protocol (IPC) configuration, status, and statistics on a switch stack or a standalone switch.

```
show ipc {mcast {appclass | groups | status} | nodes | ports [open] | queue | rpc | session {all | rx | tx} [verbose] | status [cumulative]} [ | {begin | exclude | include} expression]
```

Syntax	Description
<b>mcast</b>	Display the IPC multicast routing information.
<b>appclass</b>	Display the IPC multicast application classes.
<b>groups</b>	Display the IPC multicast groups.
<b>status</b>	Display the IPC multicast routing status.
<b>nodes</b>	Display participating nodes.
<b>ports</b>	Display local IPC ports.
<b>open</b>	(Optional) Display only the open ports.
<b>queue</b>	Display the contents of the IPC transmission queue.
<b>rpc</b>	Display the IPC remote-procedure statistics.
<b>session</b>	Display the IPC session statistics (available only in privileged EXEC mode).
<b>all</b>	Display all the session statistics (available only in privileged EXEC mode).
<b>rx</b>	Display the sessions statistics for traffic that the switch receives (available only in privileged EXEC mode).
<b>tx</b>	Display the sessions statistics for traffic that the switch forwards (available only in privileged EXEC mode).
<b>verbose</b>	(Optional) Display detailed statistics (available only in privileged EXEC mode).
<b>status</b>	Display the status of the local IPC server.
<b>cumulative</b>	(Optional) Display the status of the local IPC server since the switch was started or restarted.
<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

The **session {all | rx | tx} [verbose]** keywords are available only in privileged EXEC mode.

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.2(18)SE	The <b>mcast {appclass   groups   status}</b> , <b>rpc</b> , <b>session {all   rx   tx} [verbose]</b> , and <b>cumulative</b> keywords were added.

**Usage Guidelines**

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

**Examples**

This example shows how to display the IPC routing status:

```
Switch> show ipc mcast status
                    IPC Mcast Status
                    Tx           Rx
Total Frames                0           0
Total control Frames        0           0
Total Frames dropped        0           0
Total control Frames dropped 0           0
Total Reliable messages     0           0
Total Reliable messages acknowledged 0           0
Total Out of Band Messages  0           0
Total Out of Band messages acknowledged 0           0
Total No Mcast groups      0           0
Total Retries                0 Total Timeouts                0
Total OOB Retries           0 Total OOB Timeouts            0
Total flushes               0 Total No ports                0
```

This example shows how to display the participating nodes:

```
Switch> show ipc nodes
There is 1 node in this IPC realm.
  ID      Type      Name                Last Sent  Last Heard
  10000 Local      IPC Master          0         0
```

This example shows how to display the local IPC ports:

```
Switch> show ipc ports
There are 8 ports defined.
Port ID      Type      Name                                     (current/peak/total)
There are 8 ports defined.
  10000.1    unicast   IPC Master:Zone
  10000.2    unicast   IPC Master:Echo
  10000.3    unicast   IPC Master:Control
  10000.4    unicast   IPC Master:Init
  10000.5    unicast   FIB Master:DFS.process_level.msgs
  10000.6    unicast   FIB Master:DFS.interrupt.msgs
  10000.7    unicast   MDFS RP:Statistics
    port_index = 0 seat_id = 0x10000 last sent = 0 last heard = 0
0/2/159
  10000.8    unicast   Slot 1 :MDFS.control.RIL
    port_index = 0 seat_id = 0x10000 last sent = 0 last heard = 0
0/0/0
RPC packets:current/peak/total
                                                0/1/4
```

This example shows how to display the contents of the IPC retransmission queue:

```
Switch> show ipc queue
There are 0 IPC messages waiting for acknowledgement in the transmit queue.
There are 0 IPC messages waiting for a response.
There are 0 IPC messages waiting for additional fragments.
There are 0 IPC messages currently on the IPC inboundQ.
Messages currently in use                :          3
Message cache size                       :         1000
Maximum message cache usage              :         1000

0 times message cache crossed           5000 [max]

Emergency messages currently in use      :          0

There are 2 messages currently reserved for reply msg.

Inbound message queue depth 0
Zone inbound message queue depth 0
```

This example shows how to display all the IPC session statistics:

```
Switch# show ipc session all
Tx Sessions:
Port ID      Type      Name
10000.7     Unicast   MDFS RP:Statistics
  port_index = 0  type = Unreliable  last sent = 0  last heard = 0
  Msgs requested = 180  Msgs returned = 180

10000.8     Unicast   Slot 1 :MDFS.control.RIL
  port_index = 0  type = Reliable    last sent = 0  last heard = 0
  Msgs requested = 0   Msgs returned = 0

Rx Sessions:
Port ID      Type      Name
10000.7     Unicast   MDFS RP:Statistics
  port_index = 0  seat_id = 0x10000  last sent = 0  last heard = 0
  No of msgs requested = 180  Msgs returned = 180

10000.8     Unicast   Slot 1 :MDFS.control.RIL
  port_index = 0  seat_id = 0x10000  last sent = 0  last heard = 0
  No of msgs requested = 0   Msgs returned = 0
```

This example shows how to display the status of the local IPC server:

```
Switch> show ipc status cumulative
IPC System Status

Time last IPC stat cleared :never

This processor is the IPC master server.
Do not drop output of IPC frames for test purposes.

1000 IPC Message Headers Cached.

Rx Side      Tx Side
Total Frames      12916      608
0                0
Total from Local Ports      13080      574
Total Protocol Control Frames      116      17
Total Frames Dropped      0          0
```

## ■ show ipc

## Service Usage

Total via Unreliable Connection-Less Service	12783	171
Total via Unreliable Sequenced Connection-Less Svc	0	0
Total via Reliable Connection-Oriented Service	17	116

<output truncated>

**Related Commands**

Command	Description
<a href="#">clear ipc</a>	Clears the IPC multicast routing statistics.

# show l2protocol-tunnel

Use the **show l2protocol-tunnel** user EXEC command to display information about Layer 2 protocol tunnel ports. Displays information for interfaces with protocol tunneling enabled.

```
show l2protocol-tunnel [interface interface-id] [summary] [ | {begin | exclude | include}
                        expression]
```

Syntax Description	
<b>interface</b> <i>interface-id</i>	(Optional) Specify the interface for which protocol tunneling information appears. Valid interfaces are physical ports and port channels; the port channel range is 1 to 64.
<b>summary</b>	(Optional) Display only Layer 2 protocol 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> .
<i>expression</i>	Expression in the output to use as a reference point.

Command Modes	
User EXEC	

Command History	Release	Modification
	12.2(25)SE	This command was introduced.

**Usage Guidelines** After enabling Layer 2 protocol tunneling on an access or 802.1Q tunnel port by using the **l2protocol-tunnel** interface configuration command, you can configure some or all of these parameters:

- Protocol type to be tunneled
- Shutdown threshold
- Drop threshold

If you enter the **show l2protocol-tunnel [interface *interface-id*]** command, only information about the active ports on which all the parameters are configured appears.

If you enter the **show l2protocol-tunnel summary** command, only information about the active ports on which some or all of the parameters are configured 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 l2protocol-tunnel** command:

```
Switch> show l2protocol-tunnel
COS for Encapsulated Packets: 5
Drop Threshold for Encapsulated Packets: 0
```

Port	Protocol	Shutdown Threshold	Drop Threshold	Encapsulation Counter	Decapsulation Counter	Drop Counter
Fa3/0/3	---	----	----	----	----	----
	pagp	----	----	0	242500	----
	lacp	----	----	24268	242640	----
	udld	----	----	0	897960	----
Fa3/0/4	---	----	----	----	----	----
	pagp	1000	----	24249	242700	----
	lacp	----	----	24256	242660	----
	udld	----	----	0	897960	----
Gi6/0/3	cdp	----	----	134482	1344820	----
	---	----	----	----	----	----
	pagp	1000	----	0	242500	----
	lacp	500	----	0	485320	----
Gi6/0/4	udld	300	----	44899	448980	----
	cdp	----	----	134482	1344820	----
	---	----	----	----	----	----
	pagp	----	1000	0	242700	----
	lacp	----	----	0	485220	----
	udld	300	----	44899	448980	----

This is an example of output from the **show l2protocol-tunnel summary** command:

```
Switch> show l2protocol-tunnel summary
COS for Encapsulated Packets: 5
Drop Threshold for Encapsulated Packets: 0
```

Port	Protocol	Shutdown Threshold (cdp/stp/vtp) (pagp/lacp/udld)	Drop Threshold (cdp/stp/vtp) (pagp/lacp/udld)	Status
Fa3/0/2	pagp lacp udld	----/----/----	----/----/----	up
Fa9/0/3	pagp lacp udld	1000/----/----	----/----/----	up
Fa9/0/4	pagp lacp udld	1000/ 500/----	----/----/----	up
Fa9/0/5	cdp stp vtp	----/----/----	----/----/----	down
Gi4/0/1	pagp	----/----/----	1000/----/----	down
Gi4/0/2	pagp	----/----/----	1000/----/----	down

Related Commands	Command	Description
	<a href="#">clear l2protocol-tunnel counters</a>	Clears counters for protocol tunneling ports.
	<a href="#">l2protocol-tunnel</a>	Enables Layer 2 protocol tunneling for CDP, STP, or VTP packets on an interface.
	<a href="#">l2protocol-tunnel cos</a>	Configures a class of service (CoS) value for tunneled Layer 2 protocol packets.

# 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 48.
<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
12.1(14)EA1	This command was introduced.
12.2(25)SE	The <i>channel-group-number</i> range was changed from 1 to 12 to 1 to 48.

## 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 2-26](#) 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
Gi2/0/1   19    10        0     0         0     0         0
Gi2/0/2   14     6         0     0         0     0         0
```

**Table 2-26** *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
Gi2/0/1   SA     bndl      32768      0x3    0x3   0x4   0x3D
Gi2/0/2   SA     bndl      32768      0x3    0x3   0x5   0x3D
```

Table 2-27 describes the fields in the display:

**Table 2-27** *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>

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
Gi2/0/1	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
Gi2/0/2	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 access-group

Use the **show mac access-group** user EXEC command to display the MAC access control lists (ACLs) configured for an interface or a switch.

```
show mac access-group [interface interface-id] [ | { begin | exclude | include } expression]
```

## Syntax Description

<b>interface</b> <i>interface-id</i>	(Optional) Display the MAC ACLs configured on a specific interface. Valid interfaces are physical ports and port channels; the port-channel range is 1 to 48.
<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; the **interface** keyword is available only in privileged EXEC mode.

## Command History

Release	Modification
12.1(14)EA1	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-access group** user EXEC command. In this display, Gigabit Ethernet interface 1/0/2 has the MAC access list *macl\_e1* applied; no MAC ACLs are applied to other interfaces.

```
Switch> show mac access-group
Interface GigabitEthernet1/0/1:
  Inbound access-list is not set
Interface GigabitEthernet1/0/2:
  Inbound access-list is macl_e1
Interface GigabitEthernet1/0/3:
  Inbound access-list is not set
Interface GigabitEthernet1/0/4:
  Inbound access-list is not set
```

<output truncated>

This is an example of output from the **show mac access-group interface gigabitethernet1/0/1** command:

```
Switch# show mac access-group interface gigabitethernet1/0/1
Interface GigabitEthernet1/0/1:
  Inbound access-list is macl_e1
```

Related Commands	Command	Description
	<a href="#">mac access-group</a>	Applies a MAC access group to an interface.

# 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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table** command replaces the **show mac-address-table** command (with the hyphen).

## 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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table</b> command was replaced by the <b>show mac address-table</b> command.

## 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
----    -
A11     0000.0000.0001   STATIC  CPU
A11     0000.0000.0002   STATIC  CPU
A11     0000.0000.0003   STATIC  CPU
A11     0000.0000.0009   STATIC  CPU
A11     0000.0000.0012   STATIC  CPU
A11     0180.c200.000b   STATIC  CPU
A11     0180.c200.000c   STATIC  CPU
A11     0180.c200.000d   STATIC  CPU
A11     0180.c200.000e   STATIC  CPU
A11     0180.c200.000f   STATIC  CPU
A11     0180.c200.0010   STATIC  CPU
1       0030.9441.6327   DYNAMIC Gi6/0/4
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 ]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table address** command replaces the **show mac-address-table address** command (with the hyphen).

## 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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table address</b> command was replaced by the <b>show mac address-table address</b> command.

## 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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table aging-time** command replaces the **show mac-address-table aging-time** command (with the hyphen).

## 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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table aging-time</b> command was replaced by the <b>show mac address-table aging-time</b> command.

## 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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table count** command replaces the **show mac-address-table count** command (with the hyphen).

## 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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table count</b> command was replaced by the <b>show mac address-table count</b> command.

## 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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table dynamic** command replaces the **show mac-address-table dynamic** command (with the hyphen).

## 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; **address** keyword available only in privileged EXEC mode.

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table dynamic</b> command was replaced by the <b>show mac address-table dynamic</b> command.

## 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 Gi6/0/2
  1     00b0.6496.2741  DYNAMIC Gi6/0/2
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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table interface** command replaces the **show mac-address-table interface** command (with the hyphen).

## Syntax Description

<i>interface-id</i>	Specify an interface type; valid <i>interfaces include physical ports and port channels</i> .
<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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table interface</b> command was replaced by the <b>show mac address-table interface</b> command.

## 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 gigabitethernet6/0/2
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       0030.b635.7862   DYNAMIC Gi6/0/2
1       00b0.6496.2741   DYNAMIC Gi6/0/2
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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table notification** command replaces the **show mac-address-table notification** command (with the hyphen).

## 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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table notification</b> command was replaced by the <b>show mac address-table notification</b> command.

## 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]
```



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table static** command replaces the **show mac-address-table static** command (with the hyphen).

## 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 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

The **address** keyword is available only in privileged EXEC mode.

## Command History

Release	Modification
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table static</b> command was replaced by the <b>show mac address-table static</b> command.

## 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
<a href="#">mac address-table static</a>	Adds static addresses to the MAC address table.
<a href="#">mac address-table static drop</a>	Enables unicast MAC address filtering and configures the switch to drop traffic with a specific source or destination MAC address.
<a href="#">show mac address-table address</a>	Displays MAC address table information for the specified MAC address.
<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 vlan</a>	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* ]



## Note

Beginning with Cisco IOS Release 12.1(19)EA1, the **show mac address-table vlan** command replaces the **show mac-address-table vlan** command (with the hyphen).

## 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
12.1(11)AX	This command was introduced.
12.1(19)EA1	The <b>show mac-address-table vlan</b> command was replaced by the <b>show mac address-table vlan</b> command.

## 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
	<a href="#">show mac address-table address</a>	Displays MAC address table information for the specified MAC address.
	<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.

# 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
	12.1(11)AX	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** command when QoS is enabled and Differentiated Services Code Point (DSCP) transparency is disabled:

```
Switch> show mls qos
QoS is enabled
QoS ip packet dscp rewrite disabled
```

This is an example of output from the **show mls qos** command when QoS is enabled and DSCP transparency is enabled:

```
Switch> show mls qos
QoS is enabled
QoS ip packet dscp rewrite enabled
```

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



# show mls qos aggregate-policer

Use the **show mls qos aggregate-policer** user EXEC command to display the quality of service (QoS) aggregate policer configuration. A policer defines a maximum permissible rate of transmission, a maximum burst size for transmissions, and an action to take if either maximum is exceeded.

```
show mls qos aggregate-policer [aggregate-policer-name] [ | {begin | exclude | include}
expression]
```

## Syntax Description

<i>aggregate-policer-name</i>	(Optional) Display the policer configuration for the specified 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> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Command History

Release	Modification
12.1(11)AX	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 aggregate-policer** command:

```
Switch> show mls qos aggregate-policer policer1
aggregate-policer policer1 88000 2000000 exceed-action drop
Not used by any policy map
```

## Related Commands

Command	Description
<a href="#">mls qos aggregate-policer</a>	Defines policer parameters that can be shared by multiple classes within a policy map.

# 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
	12.1(11)AX	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**

<b>Command</b>	<b>Description</b>
<a href="#">mls qos srr-queue input bandwidth</a>	Assigns shaped round robin (SRR) weights to an ingress queue.
<a href="#">mls qos srr-queue input buffers</a>	Allocates the buffers between the ingress queues.
<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 dscp-map</a>	Maps assigned Differentiated Services Code Point (DSCP) values to an ingress queue and assigns DSCP 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 input threshold</a>	Assigns weighted tail-drop (WTD) threshold percentages to an ingress queue.

# 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, and the number of in-profile and out-of-profile packets for each policer.
<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
12.1(11)AX	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 gigabitethernet1/0/1
GigabitEthernet1/0/1
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 gigabitethernet1/0/2
GigabitEthernet1/0/2
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 gigabitethernet1/0/2 buffers
GigabitEthernet1/0/2
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 gigabitethernet1/0/2 queueing
GigabitEthernet1/0/2
Egress Priority Queue :enabled
Shaped queue weights (absolute) : 25 0 0 0
Shared queue weights : 25 25 25 25
The port bandwidth is limited to: 100%
The port is mapped to qset : 1
```

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

[Table 2-28](#) describes the fields in this display.

```
Switch> show mls qos interface gigabitethernet1/0/2 statistics
GigabitEthernet1/0/2
```

```
    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
```

## ■ show mls qos interface

```

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
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          0          0
  cos: outgoing
-----
  0 - 4 :    739155          0          0          0          0
  5 - 9 :          90          0          0          0          0

Policer: Inprofile:          0 OutofProfile:          0

```

**Table 2-28** 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.
Policer	Inprofile	Number of in profile packets for each policer.
	Outofprofile	Number of out-of-profile packets for each policer.

Related Commands	Command	Description
	<a href="#">mls qos queue-set output buffers</a>	Allocates buffers to a queue-set.
	<a href="#">mls qos queue-set output threshold</a>	Configures the weighted tail-drop (WTD) thresholds, guarantees the availability of buffers, and configures the maximum memory allocation to a queue-set.
	<a href="#">mls qos srr-queue input bandwidth</a>	Assigns SRR weights to an ingress queue.
	<a href="#">mls qos srr-queue input buffers</a>	Allocates the buffers between the ingress queues.
	<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.

Command	Description
<code>mls qos srr-queue input dscp-map</code>	Maps DSCP values to an ingress queue or maps DSCP values to a queue and to a threshold ID.
<code>mls qos srr-queue input priority-queue</code>	Configures the ingress priority queue and guarantees bandwidth.
<code>mls qos srr-queue input threshold</code>	Assigns WTD threshold percentages to an ingress queue.
<code>mls qos srr-queue output cos-map</code>	Maps CoS values to an egress queue or maps CoS values to a queue and to a threshold ID.
<code>mls qos srr-queue output dscp-map</code>	Maps DSCP values to an egress queue or maps DSCP values to a queue and to a threshold ID.
<code>policy-map</code>	Creates or modifies a policy map.
<code>priority-queue</code>	Enables the egress expedite queue on a port.
<code>queue-set</code>	Maps a port to a queue-set.
<code>srr-queue bandwidth limit</code>	Limits the maximum output on a port.
<code>srr-queue bandwidth shape</code>	Assigns the shaped weights and enables bandwidth shaping on the four egress queues mapped to a port.
<code>srr-queue bandwidth share</code>	Assigns the shared weights and enables bandwidth sharing on the four egress queues mapped to 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) or Differentiated Services Code Point (DSCP) value from the received CoS, DSCP, or IP precedence value.

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

Syntax Description		
<b>cos-dscp</b>	(Optional)	Display class of service (CoS)-to-DSCP map.
<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>dscp-cos</b>	(Optional)	Display DSCP-to-CoS map.
<b>dscp-input-q</b>	(Optional)	Display the DSCP input queue threshold map.
<b>dscp-mutation</b> <i>dscp-mutation-name</i>	(Optional)	Display the specified DSCP-to-DSCP-mutation map.
<b>dscp-output-q</b>	(Optional)	Display the DSCP output queue threshold map.
<b>ip-prec-dscp</b>	(Optional)	Display the IP-precedence-to-DSCP map.
<b>policed-dscp</b>	(Optional)	Display the policed-DSCP 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
	12.1(11)AX	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 policed-DSCP, DSCP-to-CoS, and the DSCP-to-DSCP-mutation maps appear as a matrix. The d1 column specifies the most-significant digit in the DSCP. The d2 row specifies the least-significant digit in the DSCP. The intersection of the d1 and d2 values provides the policed-DSCP, the CoS, or the mutated-DSCP value. For example, in the DSCP-to-CoS map, a DSCP value of 43 corresponds to a CoS value of 5.



The DSCP input queue threshold and the DSCP output queue threshold maps appear as a matrix. The d1 column specifies the most-significant digit of the DSCP number. The d2 row specifies the least-significant digit in the DSCP number. The intersection of the d1 and the d2 values provides the queue ID and threshold ID. For example, in the DSCP input queue threshold map, a DSCP value of 43 corresponds to queue 2 and threshold 1 (02-01).

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
Policed-dscp map:
  d1 : d2 0  1  2  3  4  5  6  7  8  9
-----
  0 :   00 01 02 03 04 05 06 07 08 09
  1 :   10 11 12 13 14 15 16 17 18 19
  2 :   20 21 22 23 24 25 26 27 28 29
  3 :   30 31 32 33 34 35 36 37 38 39
  4 :   40 41 42 43 44 45 46 47 48 49
  5 :   50 51 52 53 54 55 56 57 58 59
  6 :   60 61 62 63

Dscp-cos map:
  d1 : d2 0  1  2  3  4  5  6  7  8  9
-----
  0 :   00 00 00 00 00 00 00 00 01 01
  1 :   01 01 01 01 01 01 02 02 02 02
  2 :   02 02 02 02 03 03 03 03 03 03
  3 :   03 03 04 04 04 04 04 04 04 04
  4 :   05 05 05 05 05 05 05 05 06 06
  5 :   06 06 06 06 06 06 07 07 07 07
  6 :   07 07 07 07

Cos-dscp map:
  cos:  0  1  2  3  4  5  6  7
-----
  dscp:  0  8 16 24 32 40 48 56

IpPrecedence-dscp map:
  ipprec:  0  1  2  3  4  5  6  7
-----
  dscp:  0  8 16 24 32 40 48 56

Dscp-outputq-threshold map:
  d1 :d2  0  1  2  3  4  5  6  7  8  9
-----
  0 :   02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01
  1 :   02-01 02-01 02-01 02-01 02-01 02-01 03-01 03-01 03-01 03-01
  2 :   03-01 03-01 03-01 03-01 03-01 03-01 03-01 03-01 03-01 03-01
  3 :   03-01 03-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01
  4 :   01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 04-01 04-01
  5 :   04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01
  6 :   04-01 04-01 04-01 04-01
```

## show mls qos maps

```

Dscp-inputq-threshold map:
d1 :d2  0    1    2    3    4    5    6    7    8    9
-----
0 :    01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01
1 :    01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01
2 :    01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01
3 :    01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01
4 :    02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01 01-01
5 :    01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01
6 :    01-01 01-01 01-01 01-01

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

Dscp-dscp mutation map:
Default DSCP Mutation Map:
d1 : d2 0  1  2  3  4  5  6  7  8  9
-----
0 :    00 01 02 03 04 05 06 07 08 09
1 :    10 11 12 13 14 15 16 17 18 19
2 :    20 21 22 23 24 25 26 27 28 29
3 :    30 31 32 33 34 35 36 37 38 39
4 :    40 41 42 43 44 45 46 47 48 49
5 :    50 51 52 53 54 55 56 57 58 59
6 :    60 61 62 63

```

## Related Commands

Command	Description
<b>mls qos map</b>	Defines the CoS-to-DSCP map, DSCP-to-CoS map, DSCP-to-DSCP-mutation map, IP-precedence-to-DSCP map, and the policed-DSCP map.
<b>mls qos srr-queue input cos-map</b>	Maps CoS values to an ingress queue or maps CoS values to a queue and to a threshold ID.
<b>mls qos srr-queue input dscp-map</b>	Maps DSCP values to an ingress queue or maps DSCP values to a queue and to a threshold ID.
<b>mls qos srr-queue output cos-map</b>	Maps CoS values to an egress queue or maps CoS values to a queue and to a threshold ID.
<b>mls qos srr-queue output dscp-map</b>	Maps DSCP values to an egress queue or maps DSCP values to a queue and to a threshold ID.

# show mls qos queue-set

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

```
show mls qos queue-set [qset-id] [ | {begin | exclude | include} expression]
```

Syntax Description		
<i>qset-id</i>	(Optional) ID of the queue-set. Each port belongs to a queue-set, which defines all the characteristics of the four egress queues per port. The range is 1 to 2.	
<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
	12.1(11)AX	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 queue-set** command:

```
Switch> show mls qos queue-set
Queueset: 1
Queue   :      1      2      3      4
-----
buffers  :      25      25      25      25
threshold1:    100      50     100     100
threshold2:    100      50     100     100
reserved  :      50     100      50      50
maximum  :     400     400     400     400
Queueset: 2
Queue   :      1      2      3      4
-----
buffers  :      25      25      25      25
threshold1:    100      50     100     100
threshold2:    100      50     100     100
reserved  :      50     100      50      50
maximum  :     400     400     400     400
```

**show mls qos queue-set**

Related Commands	Command	Description
	<a href="#">mls qos queue-set output buffers</a>	Allocates buffers to the queue-set.
	<a href="#">mls qos queue-set output threshold</a>	Configures the weighted tail-drop (WTD) thresholds, guarantees the availability of buffers, and configures the maximum memory allocation of the queue-set.

# show mls qos vlan

Use the **show mls qos queue-set** user EXEC command to display the policy maps attached to a switch virtual interface (SVI).

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

Syntax Description		
<i>vlan-id</i>		Display the policy maps for the specified 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(25)SE	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 queue-set** command:

```
Switch> show mls qos vlan 10
Vlan10
Attached policy-map for Ingress:pm-test-pm-2
```

Related Commands	Command	Description
	<a href="#">policy-map</a>	Creates or modifies a policy map that can be attached to multiple ports and enters policy-map configuration mode.

# 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
12.1(11)AX	This command was introduced.
12.1(14)EA1	The <b>range list</b> and <b>detail</b> keywords were added.

## 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:      Fa4/0/24
  TX Only:      None
  Both:         Fa2/0/1-2, Fa4/0/1-5
Source VLANs:
  RX Only:      None
  TX Only:      None
  Both:         None
Source RSPAN VLAN:None
Destination Ports:Fa2/0/18
  Encapsulation:Replicate
Filter VLANs:   None
Dest RSPAN VLAN: None

Session 2
-----
Type           :Remote Source Session
Source Ports:
  RX Only:      None
  TX Only:      None
  Both:         None
Source VLANs:
  RX Only:      None
  TX Only:      10
  Both:         1-9
Source RSPAN VLAN:None
Destination Ports:None
Filter VLANs:   None
Dest RSPAN VLAN: 105
```

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

```
Switch# show monitor session 1
Session 1
-----
Type           :Local Session
Source Ports:
  RX Only:      Fa4/0/24
  TX Only:      None
  Both:         Fa2/0/1-2, Fa4/0/1-5
Source VLANs:
  RX Only:      None
  TX Only:      None
  Both:         None
Source RSPAN VLAN:None
Destination Ports:Fa2/0/18
  Encapsulation:Replicate
Filter VLANs:   None
Dest RSPAN VLAN: None
```

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              :Fa1/0/2
Destination Ports :Fa2/0/2
Encapsulation      :Replicate
  Ingress:Enabled, default VLAN = 5
  Ingress encapsulation:DOT1Q

Session 2
-----
Type                :Local Session
Source Ports       :
  Both              :Fa3/0/2
Destination Ports :Fa3/0/4
Encapsulation      :Replicate
  Ingress:Enabled
  Ingress encapsulation:ISL
```

---

**Related Commands**

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

---



# show mvr

Use the **show mvr** privileged EXEC command without keywords to display the current Multicast VLAN Registration (MVR) global parameter values, including whether or not MVR is enabled, the MVR multicast VLAN, the maximum query response time, the number of multicast groups, and the MVR mode (dynamic or compatible).

```
show mvr [ | {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
	12.1(11)AX	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 mvr** command:

```
Switch# show mvr
MVR Running: TRUE
MVR multicast VLAN: 1
MVR Max Multicast Groups: 256
MVR Current multicast groups: 0
MVR Global query response time: 5 (tenths of sec)
MVR Mode: compatible
```

In the preceding display, the maximum number of multicast groups is fixed at 256. The MVR mode is either compatible (for interoperability with Catalyst 2900 XL and Catalyst 3500 XL switches) or dynamic (where operation is consistent with IGMP snooping operation and dynamic MVR membership on source ports is supported).

Related Commands	Command	Description
	<a href="#">mvr (global configuration)</a>	Enables and configures multicast VLAN registration on the switch.
	<a href="#">mvr (interface configuration)</a>	Configures MVR ports.
	<a href="#">show mvr interface</a>	Displays the configured MVR interfaces, status of the specified interface, or all multicast groups to which the interface belongs when the <b>interface</b> and <b>members</b> keywords are appended to the command.
	<a href="#">show mvr members</a>	Displays all ports that are members of an MVR multicast group or, if there are no members, means the group is inactive.

# show mvr interface

Use the **show mvr interface** privileged EXEC command without keywords to display the Multicast VLAN Registration (MVR) receiver and source ports. Use the command with keywords to display MVR parameters for a specific receiver port.

```
show mvr interface [interface-id [members [vlan vlan-id]]] [ | {begin | exclude | include}
expression]
```

## Syntax Description

<i>interface-id</i>	(Optional) Display MVR type, status, and Immediate Leave setting for the interface.  Valid interfaces include physical ports (including type, stack member, module, and port number).
<b>members</b>	(Optional) Display all MVR groups to which the specified interface belongs.
<b>vlan</b> <i>vlan-id</i>	(Optional) Display all MVR group members on this 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

Privileged EXEC

## Command History

Release	Modification
12.1(11)AX	This command was introduced.

## Usage Guidelines

If the entered port identification is a non-MVR port or a source port, the command returns an error message. For receiver ports, it displays the port type, per port status, and Immediate-Leave setting.

If you enter the **members** keyword, all MVR group members on the interface appear. If you enter a VLAN ID, all MVR group members in the VLAN 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 mvr interface** command:

```
Switch# show mvr interface
Port      Type      Status      Immediate Leave
----      -
Gi1/0/1   SOURCE    ACTIVE/UP    DISABLED
Gi1/0/2   RECEIVER  ACTIVE/DOWN  DISABLED
```

## ■ show mvr interface

In the preceding display, Status is defined as follows:

- Active means the port is part of a VLAN.
- Up/Down means that the port is forwarding/nonforwarding.
- Inactive means that the port is not yet part of any VLAN.

This is an example of output from the **show mvr interface** command for a specified port:

```
Switch# show mvr interface gigabitethernet1/0/2
Type: RECEIVER Status: ACTIVE Immediate Leave: DISABLED
```

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

```
Switch# show mvr interface gigabitethernet1/0/2 members
239.255.0.0      DYNAMIC ACTIVE
239.255.0.1      DYNAMIC ACTIVE
239.255.0.2      DYNAMIC ACTIVE
239.255.0.3      DYNAMIC ACTIVE
239.255.0.4      DYNAMIC ACTIVE
239.255.0.5      DYNAMIC ACTIVE
239.255.0.6      DYNAMIC ACTIVE
239.255.0.7      DYNAMIC ACTIVE
239.255.0.8      DYNAMIC ACTIVE
239.255.0.9      DYNAMIC ACTIVE
```

---

**Related Commands**

Command	Description
<b>mvr (global configuration)</b>	Enables and configures multicast VLAN registration on the switch.
<b>mvr (interface configuration)</b>	Configures MVR ports.
<b>show mvr</b>	Displays the global MVR configuration on the switch.
<b>show mvr members</b>	Displays all receiver ports that are members of an MVR multicast group.

# show mvr members

Use the **show mvr members** privileged EXEC command to display all receiver and source ports that are currently members of an IP multicast group.

```
show mvr members [ip-address] [ | {begin | exclude | include} expression]
```

## Syntax Description

<i>ip-address</i>	(Optional) The IP multicast address. If the address is entered, all receiver and source ports that are members of the multicast group appear. If no address is entered, all members of all Multicast VLAN Registration (MVR) groups are listed. If a group has no members, the group is listed as Inactive.
<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
12.1(11)AX	This command was introduced.

## Usage Guidelines

The **show mvr members** command applies to receiver and source ports. For MVR-compatible mode, all source ports are members of all multicast groups.

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 mvr members** command:

```
Switch# show mvr members
MVR Group IP      Status      Members
-----
239.255.0.1      ACTIVE     Gi1/0/1(d), Gi1/0/5(s)
239.255.0.2      INACTIVE   None
239.255.0.3      INACTIVE   None
239.255.0.4      INACTIVE   None
239.255.0.5      INACTIVE   None
239.255.0.6      INACTIVE   None
239.255.0.7      INACTIVE   None
239.255.0.8      INACTIVE   None
239.255.0.9      INACTIVE   None
239.255.0.10     INACTIVE   None

<output truncated>
```

This is an example of output from the **show mvr members** *ip-address* command. It displays the members of the IP multicast group with that address:

```
Switch# show mvr members 239.255.0.2
239.255.003.--22      ACTIVE      Gi1/0/1(d), Gi1/0/2(d), Gi1/0/3(d),
                               Gi1/0/4(d), Gi1/0/5(s)
```

#### Related Commands

Command	Description
<a href="#">mvr (global configuration)</a>	Enables and configures multicast VLAN registration on the switch.
<a href="#">mvr (interface configuration)</a>	Configures MVR ports.
<a href="#">show mvr</a>	Displays the global MVR configuration on the switch.
<a href="#">show mvr interface</a>	Displays the configured MVR interfaces, status of the specified interface, or all multicast groups to which the interface belongs when the <b>members</b> keyword is appended to the command.

# 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 48.
<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
	12.1(11)AX	This command was introduced.
	12.2(25)SE	The <i>channel-group-number</i> range was changed from 1 to 12 to 1 to 48.

**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
Gi1/0/1   45    42     0     0
Gi1/0/2   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
Gi1/0/1	SC	U6/S7	H	30s	1	128	Any	16
Gi1/0/2	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	Partner Age	Partner Flags	Partner Group Cap.
Gi1/0/1	switch-p2	0002.4b29.4600	Gi01//1	9s	SC	10001
Gi1/0/2	switch-p2	0002.4b29.4600	Gi1/0/2	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
	12.1(19)EA1	The 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)
-----
Gi1/0/1 standard-switch10
Gi1/0/2 this is test macro
-----
```

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

```
Switch# show parser macro description interface gigabitethernet1/0/2
Interface Macro Description
-----
Gi1/0/2 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 policy-map

Use the **show policy-map** user EXEC command to display quality of service (QoS) policy maps, which define classification criteria for incoming traffic. Policy maps can include policers that specify the bandwidth limitations and the action to take if the limits are exceeded.

```
show policy-map [policy-map-name [class class-map-name]] [ | {begin | exclude | include}
                expression]
```

## Syntax Description

<i>policy-map-name</i>	(Optional) Display the specified policy-map name.
<b>class</b> <i>class-map-name</i>	(Optional) Display QoS policy actions for a individual class.
<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 **interface** keyword is not supported, and the statistics shown in the display should be ignored.

## Command Modes

User EXEC

## Command History

Release	Modification
12.1(11)AX	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 policy-map** command:

```
Switch> show policy-map
Policy Map videowizard_policy2
  class videowizard_10-10-10-10
    set dscp 34
    police 100000000 2000000 exceed-action drop

Policy Map mypolicy
  class dscp5
    set dscp 6
```

Related Commands	Command	Description
	<a href="#">policy-map</a>	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.

# 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, stack member, 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
12.1(11)AX	This command was introduced.
12.1(14)EA1	The <b>vlan</b> keyword was added (visible only on trunk ports).

## 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)
-----
      Gil/0/1          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 gigabitethernet1/0/1
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   Gil/0/2    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 gigabitethernet1/0/2 address** command:

```
Switch# show port-security interface gigabitethernet1/0/2 address
Secure Mac Address Table
-----
Vlan    Mac Address      Type                Ports    Remaining Age
        (mins)
-----
      1    0006.0700.0800  SecureConfigured   Gil/0/2    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 gigabitethernet1/0/2 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 power inline

Use the **show power inline** user EXEC command to display the Power over Ethernet (PoE) status for the specified PoE port or for all PoE ports.

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

Syntax Description		
<i>interface-id</i>	(Optional)	Display PoE-related power management information for the specified interface.
<b>module</b> <i>switch-number</i>	(Optional)	Limit the display to ports on the specified stack member. The switch number is 1 to 9.
<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
	12.1(19)EA1	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 power inline** command. In the display, port 2 is configured as static; power has been pre-allocated to this port, but no powered device is connected. Port 6 is a static port in the power-deny state because its maximum wattage is configured for 10 W. The connected powered device has a reported class maximum wattage for a Class 0 or Class 3 device.

```
Switch> show power inline
Module   Available      Used      Remaining
         (Watts)        (Watts)   (Watts)
-----
1         370.0          114.9     255.1
2         370.0          34.3      335.

Interface Admin Oper      Power Device          Class Max
         (Watts)
-----
Fa1/0/1  auto  on       6.3   IP Phone 7910    n/a  15.4
Fa1/0/2  static off    15.4  n/a
Fa1/0/3  auto  on       6.3   IP Phone 7910    n/a  15.4
Fa1/0/4  auto  on       6.3   IP Phone 7960    2    15.4
Fa1/0/5  static on     15.4  IP Phone 7960    2    15.4
Fa1/0/6  static power-deny 10.0  n/a          n/a  10.0
```

## show power inline

```
Fa1/0/7 auto on 6.3 IP Phone 7910 n/a 15.4
<output truncated>
```

This is an example of output from the **show power inline** command on a port:

```
Switch> show power inline fastethernet2/0/1
Interface Admin Oper Power Device Class Max
(Watts)
-----
Fa2/0/1 auto on 6.3 IP Phone 7910 n/a 15.4
```

This is an example of output from the **show power inline module** *switch-number* command on stack member 1:

```
Switch> show power inline module 1
Module Available Used Remaining
(Watts) (Watts) (Watts)
-----
1 370.0 166.2 203.9
Interface Admin Oper Power Device Class Max
(Watts)
-----
Fa1/0/1 auto on 6.3 IP Phone 7910 n/a 15.4
Fa1/0/2 auto on 6.3 IP Phone 7910 n/a 15.4
Fa1/0/3 auto on 6.3 IP Phone 7910 n/a 15.4
Fa1/0/4 auto on 6.3 IP Phone 7910 n/a 15.4
Fa1/0/5 auto on 6.3 IP Phone 7910 n/a 15.4
Fa1/0/6 auto on 6.3 IP Phone 7910 n/a 15.4
<output truncated>
```

**Table 2-29** show power inline interface Field Descriptions

Field	Description
Admin	Administration mode: auto, off, static
Oper	Operating mode: <ul style="list-style-type: none"> <li>on—the powered device is detected, and power is applied.</li> <li>off—no PoE is applied.</li> <li>faulty—device detection or a powered device is in a faulty state.</li> <li>power-deny—a powered device is detected, but no PoE is available, or the maximum wattage exceeds the detected powered-device maximum.</li> </ul>
Power	The supplied PoE in watts
Device	The device type detected: n/a, unknown, Cisco powered-device, IEEE powered-device, <name from CDP>
Class	The IEEE classification: n/a, Class <0–4>
Available	The total amount of PoE in the system
Used	The amount of PoE allocated to ports
Remaining	The amount of PoE not allocated to ports in the system. (Available – Used = Remaining)

Related Commands	Command	Description
	<a href="#">logging event power-inline-status</a>	Enables the logging of PoE events.
	<a href="#">power inline</a>	Configures the power management mode for the specified PoE port or for all PoE ports.
	<a href="#">show controllers power inline</a>	Displays the values in the registers of the specified PoE controller.

# 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, or use the command without a keyword to display the template in use.

```
show sdm prefer [default | dual-ipv4-and-ipv6 {default | vlan} |routing | vlan [desktop]] [|
  {begin | exclude | include} expression]
```

Syntax Description	
<b>default</b>	(Optional) Display the template that balances system resources among features.
<b>dual-ipv4-and-ipv6</b> { <b>default</b>   <b>vlan</b> }	(Optional) Display the templates that support both IPv4 and IPv6. <ul style="list-style-type: none"> <li>• <b>default</b>—Display the default dual template configuration.</li> <li>• <b>vlan</b>—Display the VLAN dual template configuration.</li> </ul> <p><b>Note</b> Though visible on all switches, this option is supported only when the stack is running the advanced IP services image.</p>
<b>routing</b>	(Optional) Display the template that maximizes system resources for routing.
<b>vlan</b>	(Optional) Display the template that maximizes system resources for Layer 2 VLANs.
<b>desktop</b>	(Optional) For Catalyst 3750-12S aggregator switches only, display the desktop templates. For this switch, when you do not enter the <b>desktop</b> keyword, the aggregator templates appear.
<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
	12.1(11)AX	This command was introduced.
	12.1(14)EA1	The <b>desktop</b> keyword was added.
	12.2(25)SE	The <b>dual-ipv4-and-ipv6</b> { <b>default</b>   <b>vlan</b> } keywords were added.

## 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, displaying the template in use:

```
Switch# show sdm prefer
"default" template:
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

number of unicast mac addresses:          12K
number of igmp groups + multicast routes: 1K
number of unicast routes:                 0
number of qos aces:                       512
number of security aces:                  1K

Switch# show sdm prefer
The current template is "desktop default" template.
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

number of unicast mac addresses:          6K
number of igmp groups + multicast routes: 1K
number of unicast routes:                 8K
  number of directly connected hosts:     6K
  number of indirect routes:               2K
number of policy based routing aces:      0
number of qos aces:                       512
number of security aces:                  1K
```

This is an example of output from the `show sdm prefer routing` command entered on an aggregator switch:

```
Switch# show sdm prefer routing
"aggregate routing" template:
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

number of unicast mac addresses:          6K
number of igmp groups + multicast routes: 1K
number of unicast routes:                 20K
  number of directly connected hosts:     6K
  number of indirect routes:               14K
number of policy based routing aces:      512
number of qos aces:                       512
number of security aces:                  1K
```

This is an example of output from the `show sdm prefer routing` command entered on a desktop switch:

```
Switch# show sdm prefer routing
"desktop routing" template:
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

number of unicast mac addresses:          3K
number of igmp groups + multicast routes: 1K
number of unicast routes:                 11K
  number of directly connected hosts:     3K
  number of indirect routes:               8K
```

## show sdm prefer

```

number of policy based routing aces:      512
number of qos aces:                       512
number of security aces:                 1K

```

This is an example of output from the **show sdm prefer dual-ipv4-and-ipv6 default** command entered on a desktop switch:

```

Switch# show sdm prefer dual-ipv4-and-ipv6 default
"desktop IPv4 and IPv6 default" template:
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

number of unicast mac addresses:          2K
number of IPv4 IGMP groups + multicast routes: 1K
number of IPv4 unicast routes:           3K
  number of directly-connected IPv4 hosts: 2K
  number of indirect IPv4 routes:        1K
number of IPv6 multicast groups:         1K
number of directly-connected IPv6 addresses: 2K
number of indirect IPv6 unicast routes:   1K
number of IPv4 policy based routing aces: 0
number of IPv4/MAC qos aces:             512
number of IPv4/MAC security aces:        1K
number of IPv6 policy based routing aces: 0
number of IPv6 qos aces:                 510
number of IPv6 security aces:            510

```

This is an example of output from the **show sdm prefer** command when you have configured a new template but have not reloaded the switch:

```

Switch# show sdm prefer
The current template is "desktop routing" template.
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

number of unicast mac addresses:          3K
number of igmp groups + multicast routes: 1K
number of unicast routes:                11K
  number of directly connected hosts:     3K
  number of indirect routes:              8K
number of qos aces:                      512
number of security aces:                  1K

On next reload, template will be "desktop vlan" template.

```

### Related Commands

Command	Description
<a href="#">sdm prefer</a>	Sets the SDM template to maximize resources for routing or VLANs or to the default template, to select a dual IPv4 and IPv6 template, or to select the desktop or aggregator templates.

# 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
	12.1(14)EA1	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] [ | 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 48.



<b>mst</b> [ <b>configuration</b>   [ <i>instance-id</i> [ <b>detail</b>   <b>interface</b> <i>interface-id</i> [ <b>detail</b> ]]]	(Optional) Display the multiple spanning-tree (MST) region configuration and status (available only in privileged EXEC mode). 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 15.  Valid interfaces include physical ports, VLANs, and port channels. The VLAN range is 1 to 4094. The port-channel range is 1 to 48.
<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.
<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; indicated keywords available only in privileged EXEC mode.

**Command History**

Release	Modification
12.1(11)AX	This command was introduced.
12.1(14)EA1	The <b>mst</b> keyword and options were added.

**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 (GigabitEthernet2/0/1)
            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
-----
Gi2/0/1            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 24 (GigabitEthernet2/0/1), 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 (GigabitEthernet2/0/1) 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 gigabitethernet2/0/1
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 gigabitethernet2/0/1
GigabitEthernet2/0/1 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       Gi1/0/1          path cost 200038

```

## show spanning-tree

```

          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
-----
GigabitEthernet2/0/1    root FWD  200000  128  P2P bound(STP)
GigabitEthernet2/0/2    desg FWD  200000  128  P2P bound(STP)
Port-channel1           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.
<a href="#">spanning-tree loopguard default</a>	Prevents alternate or root ports from becoming the designated port because of a failure that leads to a unidirectional link.
<a href="#">spanning-tree mst configuration</a>	Enters multiple spanning-tree (MST) configuration mode through which the MST region configuration occurs.
<a href="#">spanning-tree mst cost</a>	Sets the path cost for MST calculations.
<a href="#">spanning-tree mst forward-time</a>	Sets the forward-delay time for all MST instances.
<a href="#">spanning-tree mst hello-time</a>	Sets the interval between hello BPDUs sent by root switch configuration messages.
<a href="#">spanning-tree mst max-age</a>	Sets the interval between messages that the spanning tree receives from the root switch.
<a href="#">spanning-tree mst max-hops</a>	Sets the number of hops in an MST region before the BPDU is discarded and the information held for an interface is aged.
<a href="#">spanning-tree mst port-priority</a>	Configures an interface priority.
<a href="#">spanning-tree mst priority</a>	Configures the switch priority for the specified spanning-tree instance.
<a href="#">spanning-tree mst root</a>	Configures the MST root switch priority and timers based on the network diameter.
<a href="#">spanning-tree port-priority</a>	Configures an interface priority.
<a href="#">spanning-tree portfast (global configuration)</a>	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.

Command	Description
<a href="#">spanning-tree portfast (interface configuration)</a>	Enables the Port Fast feature on an interface and all its associated VLANs.
<a href="#">spanning-tree uplinkfast</a>	Accelerates the choice of a new root port when a link or switch fails or when the spanning tree reconfigures itself.
<a href="#">spanning-tree vlan</a>	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, stack member, 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
12.1(11)AX	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
-----  -
Gi1/0/1   Forwarding   20 pps     10 pps     5 pps
Gi1/0/2   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 1/0/1
Interface   Filter State  Upper      Lower      Current
-----
Gi1/0/1    Forwarding   20 pps    10 pps    5 pps
```

Table 2-30 describes the fields in the **show storm-control** display.

**Table 2-30** *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 switch

Use the **show switch** user EXEC command to display information related to the stack member or the switch stack.

```
show switch [stack-member-number | detail | neighbors | stack-ports | stack-ring activity [detail]]
           [| {begin | exclude | include} expression]
```

Syntax Description	
<i>stack-member-number</i>	(Optional) Display information for the specified stack member. The range is 1 to 9.
<b>detail</b>	(Optional) Display detailed information about the stack ring.
<b>neighbors</b>	(Optional) Display the neighbors for the entire switch stack.
<b>stack-ports</b>	(Optional) Display port information for the entire switch stack.
<b>stack-ring activity</b> [ <b>detail</b> ]	(Optional) Display the number of frames per stack member that are sent to the stack ring. Use the <b>detail</b> keyword to display the ASIC, the receive queues, and the number of frames per stack member that are sent to the stack ring.
<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
	12.1(11)AX	This command was introduced.
	12.1(14)EA1	The display was expanded to include Switch Database Management (SDM) mismatch.
	12.2(20)SE	The display was expanded to include provisioning information. The <b>stack-ring activity</b> [ <b>detail</b> ] keywords were added.

**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.

These are the states displayed from this command:

- **Waiting**—The state when a switch is booting up and waiting for communication from other switches in the stack. The switch has not yet determined whether it is a stack master or not.  
Stack members not participating in a stack master election remain in the waiting state until the stack master is elected and ready.
- **Initializing**—The state when a switch has determined whether it is the stack master or not. If the switch is not the stack master, it is receiving its system- and interface-level configuration from the stack master and loading it.



- **Ready**—The state when the stack member has completed loading the system- and interface-level configuration and is ready to forward traffic.
- **Master Re-Init**—The state immediately after a stack master re-election and a different stack member is elected stack master. The new stack master is re-initializing its configuration. This state applies only to the new stack master.
- **Ver Mismatch**—The state of a switch in version mismatch (VM) mode. VM mode is when a switch joining the switch stack has a different stack protocol minor version number than the stack master.
- **SDM Mismatch**—The state of a switch in Switch Database Management (SDM) mismatch mode. SDM mismatch is when a stack member does not support the SDM template running on the stack master.
- **Provisioned**—The state of a preconfigured switch before it becomes an active member of a switch stack, or the state of a stack member after it has left the switch stack. The MAC address and the priority number in the display are always 0 for the provisioned switch.

A typical state transition for a stack member (including a stack master) booting up is Waiting -> Initializing -> Ready.

A typical state transition for a stack member becoming a stack master after a stack master election is Ready -> Master Re-Init -> Ready.

A typical state transition for a stack member in version mismatch (VM) mode is Waiting -> Ver Mismatch.

The word *slave* in the output refers to a stack member other than the stack master.

You can use the **show switch** command to identify whether the provisioned switch exists in the switch stack. The **show running-config** and the **show startup-config** privileged EXEC commands do not provide this information.

## Examples

This example shows how to display summary information about a switch stack:

```
Switch> show switch
```

Switch#	Role	Mac Address	Priority	Current State
6	Slave	0003.e31a.1e00	1	Ready
*8	Master	0003.e31a.1200	1	Ready
2	Slave	0000.000.0000	0	Provisioned

This example shows detailed information about a switch stack:

```
Switch> show switch detail
```

Switch#	Role	Mac Address	Priority	Current State
2	Slave	0000.000.0000	0	Provisioned
6	Slave	0003.e31a.1e00	1	Ready
*8	Master	0003.e31a.1200	1	Ready

  

Switch#	Stack Port Status		Neighbors	
	Port A	Port B	Port A	Port B
6	Down	Ok	None	8
8	Ok	Down	6	None

This example shows how to display summary information about stack member 6:

```
Switch> show switch 6
```

Switch#	Role	Mac Address	Priority	Current State
6	Slave	0003.e31a.1e00	1	Ready

This example shows how to display neighbor information for a switch stack:

```
Switch> show switch neighbors
```

Switch #	Port A	Port B
6	None	8
8	6	None

This example shows how to display stack-port information for a switch stack:

```
Switch> show switch stack-ports
```

Switch #	Port A	Port B
6	Down	Ok
8	Ok	Down

This example shows how to display detailed stack-ring activity information for a switch stack:

```
Switch> show switch stack-ring activity detail
```

Switch	Asic	Rx Queue-1	Rx Queue-2	Rx Queue-3	Rx Queue-4	Total
1	0	2021864	1228937	281510	0	3532311
1	1	52	0	72678	0	72730
Switch 1 Total:						3605041
2	0	2020901	90833	101680	0	2213414
2	1	52	0	0	0	52
Switch 2 Total:						2213466

Total frames sent to stack ring : 5818507

Note: these counts do not include frames sent to the ring by certain output features, such as output SPAN and output ACLs.

## Related Commands

Command	Description
<a href="#">reload</a>	Reloads the stack member and puts a configuration change into effect.
<a href="#">remote command</a>	Monitors all or specified stack members.
<a href="#">session</a>	Accesses a specific stack member.
<a href="#">switch priority</a>	Changes the stack member priority value.
<a href="#">switch provision</a>	Provisions a new switch before it joins the switch stack.
<a href="#">switch renumber</a>	Changes the stack member number.

# 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
	12.1(11)AX	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 Mbps; the system jumbo MTU refers to Gigabit 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 1500 bytes
```

Related Commands	Command	Description
	<a href="#">system mtu</a>	Sets the MTU size for the Fast Ethernet or Gigabit Ethernet 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
12.1(11)AX	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 2-31](#) describes the fields in this display.

```
Switch> show udld gigabitethernet2/0/1
Interface gi2/0/1
---
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: Gi2/0/1
    Neighbor echo 1 device: Switch-B
    Neighbor echo 1 port: Gi2/0/2
    Message interval: 5
    CDP Device name: Switch-A
```

**Table 2-31** *show udld Field Descriptions*

Field	Description
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
	<a href="#">udd</a>	Enables aggressive or normal mode in UDLD or sets the configurable message timer time.
	<a href="#">udd port</a>	Enables UDLD on an individual interface or prevents a fiber-optic interface from being enabled by the <b>udd</b> global configuration command.
	<a href="#">udd reset</a>	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
	12.1(11)AX	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:

```
Switch> show version
Cisco Internetwork Operating System Software
IOS (tm) C3750 Software (C3750-I5-M), Version 12.1(0.0.709)EA1, CISCO DEVELOPMENT TEST
VERSION
Copyright (c) 1986-2003 by cisco Systems, Inc.
Compiled Fri 02-May-03 21:09 by antonino
Image text-base: 0x00003000, data-base: 0x008E36A4

ROM: Bootstrap program is C3750 boot loader
BOOTLDR: C3750 Boot Loader (C3750-HBOOT-M) Version 12.1(0.0.130)EA1, CISCO DEVELOPMENT
TEST VERSION

Switch uptime is 2 days, 11 hours, 16 minutes
System returned to ROM by power-on
System image file is "flash:i5.709"

cisco WS-C3750-48TS (PowerPC405) processor with 120822K/10240K bytes of memory.
Last reset from power-on
Bridging software.
Target IOS Version 12.1(14)EA1
1 Virtual Ethernet/IEEE 802.3 interface(s)
48 FastEthernet/IEEE 802.3 interface(s)
32 Gigabit Ethernet/IEEE 802.3 interface(s)
The password-recovery mechanism is enabled.

512K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address      : 00:09:43:A7:F2:00
```

## show version

```

Motherboard assembly number : 73-7056-05
Motherboard serial number   : CSJ0638004U
Motherboard revision number  : 05
Model number                 : 73-7056-05

```

Switch	Ports	Model	SW Version	SW Image
1	28	WS-C3750G-24TS	12.1(0.0.709)EA1	C3750-I5-M
* 8	52	WS-C3750-48TS	12.1(0.0.709)EA1	C3750-I5-M

```
Switch 01
```

```

Switch Uptime           : 2 days, 11 hours, 17 minutes
Base ethernet MAC Address : 00:0B:46:2E:35:80
Motherboard assembly number : 73-7058-04
Power supply part number   : 341-0045-01
Motherboard serial number  : CSJ0640010L
Model number               : WS-C3750-24TS-SMI
System serial number       : CSJ0642U00A

```

```
Configuration register is 0xF
```

```
<output truncated>
```



# 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.

```
show vlan [brief | dot1q tag native | id vlan-id | internal usage | mtu | name vlan-name |
private-vlan [type] | remote-span | summary] [ | {begin | exclude | include} expression]
```

The **show vlan private-vlan** command is only available if your switch is running the enhanced multilayer image (EMI).

Syntax	Description
<b>brief</b>	(Optional) Display one line for each VLAN with the VLAN name, status, and its ports.
<b>dot1q tag native</b>	(Optional) Display the 802.1Q native VLAN tagging status.
<b>id</b> <i>vlan-id</i>	(Optional) Display information about a single VLAN identified by VLAN ID number. For <i>vlan-id</i> , the range is 1 to 4094.
<b>internal usage</b>	(Optional) Display a list of VLANs being used internally by the switch. These VLANs are always from the extended range (VLAN IDs 1006 to 4094), and you cannot create VLANs with these IDs by using the <b>vlan</b> global configuration command until you remove them from internal use.
<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</b> <i>vlan-name</i>	(Optional) Display information about a single VLAN identified by VLAN name. The VLAN name is an ASCII string from 1 to 32 characters.
<b>private-vlan</b>	(Optional) Display information about configured private VLANs, including primary and secondary VLAN IDs, type (community, isolated, or primary) and ports belonging to the private VLAN. This keyword is only supported if your switch is running the EMI.
<b>type</b>	(Optional) Display only private VLAN ID and type.
<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> .
<i>expression</i>	Expression in the output to use as a reference point.



### Note

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

### Command Modes

User EXEC

**Command History**

Release	Modification
12.1(11)AX	This command was introduced.
12.2(20)SE	The <b>mtu</b> and <b>private-vlan</b> keywords were added.
12.2(25)SE	The <b>dot1q tag native</b> keywords were added.

**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.

If you try to associate a private VLAN secondary VLAN with a primary VLAN before you define the secondary VLAN, the secondary VLAN is not included in the **show vlan private-vlan** command output.

In the **show vlan private-vlan type** command output, a type displayed as *normal* means a VLAN that has a private VLAN association but is not part of the private VLAN. For example, if you define and associate two VLANs as primary and secondary VLANs and then delete the secondary VLAN configuration without removing the association from the primary VLAN, the VLAN that was the secondary VLAN is shown as *normal* in the display. In the **show vlan private-vlan** output, the primary and secondary VLAN pair is shown as *non-operational*.

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 2-32](#) describes the fields in the display.

```
Switch> show vlan
VLAN Name                Status    Ports
-----
1    default                active    Fa1/0/1, Fa1/0/2, Fa1/0/3
                                           Fa1/0/4, Fa1/0/5, Fa1/0/6
                                           Fa1/0/7, Fa1/0/8, Fa1/0/9
                                           Fa1/0/10, Fa1/0/11, Fa1/0/12
                                           Fa1/0/13, Fa1/0/14, Fa1/0/15
                                           Fa1/0/16, Fa1/0/17, Fa1/0/18
                                           Fa1/0/19, Fa1/0/20, Fa1/0/21
                                           Fa1/0/24, Gi1/0/1, Gi1/0/2

<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
-----
Primary Secondary Type Ports
-----
20      25      isolated Fa1/0/13, Fa1/0/20, Fa1/0/22, Gi1/0/1, Fa2/0/13, Fa2/0/22,
          Fa3/0/13, Fa3/0/14. Fa3/0/20, Gi3/0/1
20      30      community Fa1/0/13, Fa1/0/20, Fa1/0/21, Gi1/0/1, Fa2/0/13, Fa2/0/20,
          Fa3/0/14, Fa3/0/20, Fa3/0/21, Gi3/0/1
20      35      community Fa1/0/13, Fa1/0/20, Fa1/0/23, Fa1/0/33, Gi1/0/1, Fa2/0/13,
          Fa3/0/14, Fa3/0/20, Fa3/0/23, Fa3/0/33, Gi3/0/1

<output truncated>

```

**Table 2-32** *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.
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	Includes any private VLANs that have been configured, including the primary VLAN ID, the secondary VLAN ID, the type of secondary VLAN (community or isolated), and the ports that belong to it.

This is an example of output from the **show vlan dot1q tag native** command:

```
Switch> show vlan dot1q tag native
dot1q native vlan tagging is disabled
```

This is an example of output from the **show vlan private-vlan** command:

```
Switch> show vlan private-vlan
Primary Secondary Type Ports
-----
10 501 isolated Gi3/0/3
10 502 community Fa2/0/11
10 503 non-operational3 -
20 25 isolated Fa1/0/13, Fa1/0/20, Fa1/0/22, Gi1/0/1, Fa2/0/13,
Fa2/0/22, Fa3/0/13, Fa3/0/14, Fa3/0/20, Gi3/0/1
20 30 community Fa1/0/13, Fa1/0/20, Fa1/0/21, Gi1/0/1, Fa2/0/13,
Fa2/0/20, Fa3/0/14, Fa3/0/20, Fa3/0/21, Gi3/0/1
20 35 community Fa1/0/13, Fa1/0/20, Fa1/0/23, Fa1/0/33. Gi1/0/1,
Fa2/0/13, Fa3/0/14, Fa3/0/20. Fa3/0/23, Fa3/0/33,
Gi3/0/1
20 55 non-operational
2000 2500 isolated Fa1/0/5, Fa1/0/10, Fa2/0/5, Fa2/0/10, Fa2/0/15
```

This is an example of output from the **show vlan private-vlan type** command:

```
Switch> show vlan private-vlan type
Vlan Type
-----
10 primary
501 isolated
502 community
503 normal
```

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 Fa1/0/7, Fa1/0/8
Gi3/0/1, Gi3/0/2

VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
-----
2 enet 100002 1500 - - - - - 0 0

Remote SPAN VLAN
-----
Disabled
```

This is an example of output from the **show vlan internal usage** command. It shows that VLANs 1025 and 1026 are being used as internal VLANs for Fast Ethernet routed ports 23 and 24 on stack member 1. If you want to use one of these VLAN IDs, you must first shut down the routed port, which releases the internal VLAN, and then create the extended-range VLAN. When you start up the routed port, another internal VLAN number is assigned to it.

```
Switch> show vlan internal usage
VLAN Usage
-----
```

```
1025 FastEthernet1/0/23
1026 FastEthernet1/0/24
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<a href="#">private-vlan</a>	Configures a VLAN as a community, isolated, or primary VLAN or associates a primary VLAN with secondary VLANs.
<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 vlan access-map

Use the **show vlan access-map** privileged EXEC command to display information about a particular VLAN access map or for all VLAN access maps.

```
show vlan access-map [mapname] [ | { begin | exclude | include } expression ]
```

Syntax Description	
<i>mapname</i>	(Optional) Name of a specific VLAN access 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** Privileged EXEC

Command History	Release	Modification
	12.1(11)AX	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 vlan access-map** command:

```
Switch# show vlan access-map
Vlan access-map "SecWiz" 10
  Match clauses:
    ip address: SecWiz_Fa1_0_3_in_ip
  Action:
    forward
```

Related Commands	Command	Description
	<a href="#">show vlan filter</a>	Displays information about all VLAN filters or about a particular VLAN or VLAN access map.
	<a href="#">vlan access-map</a>	Creates a VLAN map entry for VLAN packet filtering.
	<a href="#">vlan filter</a>	Applies a VLAN map to one or more VLANs.

# show vlan filter

Use the **show vlan filter** privileged EXEC command to display information about all VLAN filters or about a particular VLAN or VLAN access map.

```
show vlan filter [access-map name | vlan vlan-id] [ | {begin | exclude | include} expression]
```

Syntax Description	Parameter	Description
	<b>access-map</b> <i>name</i>	(Optional) Display filtering information for the specified VLAN access map.
	<b>vlan</b> <i>vlan-id</i>	(Optional) Display filtering information for the specified 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** Privileged EXEC

Command History	Release	Modification
	12.1(11)AX	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 vlan filter** command:

```
Switch# show vlan filter
VLAN Map map_1 is filtering VLANs:
 20-22
```

Related Commands	Command	Description
	<a href="#">show vlan access-map</a>	Displays information about a particular VLAN access map or for all VLAN access maps.
	<a href="#">vlan access-map</a>	Creates a VLAN map entry for VLAN packet filtering.
	<a href="#">vlan filter</a>	Applies a VLAN map to one or more VLANs.

# 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	statistics	(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
	12.1(11)AX	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 vmmps statistics** command. [Table 2-33](#) describes each field in the display.

```
Switch> show vmmps 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 2-33** *show vmmps 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.

**show vmps**

Related Commands	Command	Description
	<b>clear vmps statistics</b>	Clears the statistics maintained by the VQP client.
	<b>vmps reconfirm (privileged EXEC)</b>	Sends VQP queries to reconfirm all dynamic VLAN assignments with the VMPS.
	<b>vmps retry</b>	Configures the per-server retry count for the VQP client.
	<b>vmps server</b>	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
12.1(11)AX	This command was introduced.
12.1(14)EA1	The <b>password</b> keyword was added.

## 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 2-34](#) 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 non-pruning-capable device
-----	-----	-----	-----
Fa1/0/47	0	0	0
Fa1/0/48	0	0	0
Gi2/0/1	0	0	0
Gi3/0/2	0	0	0

**Table 2-34** *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 2-34** *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 2-35](#) 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 2-35** *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 2-35** *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
<a href="#">clear vtp counters</a>	Clears the VTP and pruning counters.
<a href="#">vtp (global configuration)</a>	Configures the VTP filename, interface name, domain name, and mode.
<a href="#">vtp (VLAN configuration)</a>	Configures the VTP domain name, password, pruning, and mode.