# rmon collection stats

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

rmon collection stats index [owner name]

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

Syntax Description	index	Remote Network Monitoring (RMON) collection control index. The range is 1 to 65535.
	owner name	(Optional) Owner of the RMON collection.
Defaults	The RMON statistics	collection is disabled.
Command Modes	Interface configuration	n
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	The RMON statistics interface (UNI) or en	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface
	The RMON statistics interface (UNI) or en configuration comma are disabled by defau	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface nd to enable it before using the <b>rmon collection stats</b> command. UNIs and ENIs lt. Network node interfaces (NNIs) are enabled by default.
	The RMON statistics interface (UNI) or en configuration comma are disabled by defau	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface nd to enable it before using the <b>rmon collection stats</b> command. UNIs and ENIs
	The RMON statistics interface (UNI) or en configuration comma are disabled by defau This example shows	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface nd to enable it before using the <b>rmon collection stats</b> command. UNIs and ENIs lt. Network node interfaces (NNIs) are enabled by default.
Usage Guidelines Examples	The RMON statistics interface (UNI) or en configuration comma are disabled by defau This example shows I Switch(config)# int Switch(config-if)#	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface nd to enable it before using the <b>rmon collection stats</b> command. UNIs and ENIs lt. Network node interfaces (NNIs) are enabled by default.
	The RMON statistics interface (UNI) or en configuration comma are disabled by defau This example shows I Switch(config)# int Switch(config-if)#	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface nd to enable it before using the <b>rmon collection stats</b> command. UNIs and ENIs lt. Network node interfaces (NNIs) are enabled by default. now to collect RMON statistics for the owner <i>root</i> : cerface gigabitethernet0/1 rmon collection stats 2 owner root
·	The RMON statistics interface (UNI) or en configuration comma are disabled by defau This example shows I Switch(config)# int Switch(config-if)# You can verify your s	collection command is based on hardware counters. If the port is a user network hanced network interface (ENI), you must use the <b>no shutdown</b> interface nd to enable it before using the <b>rmon collection stats</b> command. UNIs and ENIs lt. Network node interfaces (NNIs) are enabled by default. now to collect RMON statistics for the owner <i>root</i> : cerface gigabitethernet0/1 rmon collection stats 2 owner root etting by entering the show rmon statistics privileged EXEC command.

# sdm prefer

Use the **sdm prefer** global configuration command to configure the template used in Switch Database Management (SDM) resource allocation. If the switch is running the metro IP access image, you can use a template to balance resources between Layer 2 and Layer 3 functionality, or you can maximize system usage to support only Layer 2 features in hardware. Use the **no** form of this command to return to the default template.

sdm prefer {default | layer-2}

no sdm prefer

Syntax Description	default	Give balance to all functions.
	layer-2	Maximizes system resources for Layer 2 functionality and does not support routing in hardware.
Defaults	The default templa	ate provides a balance to all features.
Note	On switches that a is supported.	re running the metro base image or the metro access image, only the layer-2 template
Command Modes	Global configurati	on
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12.2(25)SE	The number of unicast MAC addresses supported by the default template was increased to 5K.
Usage Guidelines	command before y	ne switch for the configuration to take effect. If you enter the <b>show sdm prefer</b> you enter the <b>reload</b> privileged EXEC command, the <b>show sdm prefer</b> command e currently in use and the template that will become active after a reload.
Usage Guidelines	command before y shows the template The default templa not have routing e	ou enter the reload privileged EXEC command, the show sdm prefer command

Table 2-4 lists the approximate number of each resource supported in each of the templates for a switch running the metro IP access image. The values in the template are based on eight routed interfaces and approximately 1024 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.

Resource	Layer-2	Default
Unicast MAC addresses	8 K	5 K
IPv4 IGMP groups and multicast routes (default only)	_	1 K
IP v4 IGMP groups (layer-2 template only)	1 K	-
IPv4 multicast routes (layer-2 template only)	0	-
IPv4 IGMP groups and multicast routes	1 K	-
IPv4 unicast routes	0	9 K
Directly connected IPv4 hosts	_	5 K
Indirect IPv4 routes	_	4 K
IPv4 policy-based routing access control entries (ACEs)	0	512
IPv4 or MAC quality of service (QoS) ACEs	512	512
IPv4 or MAC security ACEs	1 K	1 K

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

## **Examples**

This example shows how to configure the layer-2 template on a switch:

Switch(config)# sdm prefer layer-2
Switch(config)# exit
Switch# reload

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

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

# service instance

Use the **service instance** interface configuration command to configure an Ethernet service instance on the interface and to enter Ethernet service configuration mode. Use the **no** form of this command to delete the service instance.

service instance id ethernet [evc-id]

**no service instance** *id* 

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	id	Define a service instance identifier, a per-interface service identifier that does not map to a VLAN. The range is 1 to 4294967295.		
	ethernet	Identify the service instance as an Ethernet instance.		
	evc-id	(Optional) Attach an Ethernet virtual connection (EVC) to the service instance.		
Defaults	No Ethernet servio	ce instances are defined.		
Command Modes	Interface configur	ation		
Command History	Release	Modification		
	12.2(25)SEG	This command was introduced.		
Usage Guidelines	After you enter the	e service instance id ethernet command, the switch enters Ethernet service		
	configuration mod	le, and these configuration commands are available:		
	• <b>default</b> : sets t	he service instance to its default state.		
		<b>ce-vlan map</b> : configures Ethernet Local Management Interface (LMI) parameters. See <b>mi ce-vlan map</b> command.		
	• exit: exits EV	C configuration mode and returns to global configuration mode.		
	• <b>no</b> : negates a	command or returns a command to its default setting.		
Examples	This example show configuration mod	ws how to define an Ethernet service instance and to enter Ethernet service le for EVC <i>test</i> :		
	Switch(config-if Switch(config-if	)# service instance 333 ethernet test -srv)#		

Related Commands	Command	Description
	show ethernet service instance	Displays information about configured Ethernet service instances.

## service password-recovery

Use the **service password-recovery** global configuration command to enable the password-recovery mechanism (the default). This mechanism allows an end user with physical access to the switch to press the break key on the console terminal to 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
	12.2(25)EX	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. This provides configuration file security by ensuring that only authenticated and authorized users have access to the configuration file and prevents users from accessing the configuration file by using the password recovery process.

The password recovery procedure requires using a break key. After the switch performs power-on self test (POST), the switch begins the autoboot process. The boot loader prompts the user for a break key character during the boot-up sequence, as shown in this example:

\*\*\*\*\* The system will autoboot in 5 seconds \*\*\*\*\* Send a break key to prevent autobooting.

You must enter the break key on the console terminal within 5 seconds of receiving the message that the system will autoboot. A user with physical access to the switch presses the break key on the console terminal within 5 seconds of receiving the message that flash memory is initializing. The System LED flashes green until the **break key** is accepted. After the **break key** is accepted, the System LED turns off until after the switch boots.

#### 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 **break key** 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 configuration 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 configuration file on the switch.

You can enter the **show version** privileged EXEC command to determine if password recovery is enabled or disabled.

Examples

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

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

Related Commands	Command	Description
	show version	Displays version information for the hardware and firmware.

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# service-policy (interface configuration)

Use the **service-policy** interface configuration command to apply a policy map defined by the **policy-map** command to the incoming or outgoing traffic of a physical port. Use the **no** form of this command to remove the policy map and port association.

service-policy {input | output} policy-map-name

**no service-policy** {**input** | **output**} *policy-map-name* 

Syntax Description	input	Apply the policy map to the input of a physical port.
	output	Apply the policy map to the output of a physical port.
	policy-map-name	The specified policy map to be applied.
Note	Though visible in the orignore the statistics the	command-line help strings, the <b>history</b> keyword is not supported, and you should at it gathers.
Defaults	No policy maps are at	tached to the port.
Command Modes	Interface configuration	n
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	Only one input policy	map and one output policy map can be attached to an interface.
	the switch. However, to output policy maps at	IOS Release 12.2(35)SE, you can attach an output policy map to each interface on the switch supports a limit of three unique queue-limit configurations across all any time. Multiple policy maps can share the same queue-limit configuration. If tput policy map with a fourth unique queue-limit configuration, you see this error
	QoS: Configurati configurations e	ion failed. Maximum number of allowable unique queue-limit exceeded.
	-	r output policy maps to a Fast Ethernet or Gigabit Ethernet port. You cannot attach virtual interfaces (SVIs) and EtherChannel interfaces.

# ExamplesThis example shows how to apply plcmap1 as an output policy map:<br/>Switch(config)# interface gigabitethernet0/1<br/>Switch(config-if)# service-policy output plcmap1This example shows how to remove plcmap2 from the port:<br/>Switch(config)# interface gigabitethernet0/2

Switch(config-if)# no service-policy output plcmap2

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

#### **Related Commands** Command Description policy-map Creates or modifies a policy map that can be attached to multiple ports to specify a service policy. show policy-map Displays quality of service (QoS) policy maps. show policy-map Displays policy maps configured on the specified interface or on all **interface** [*interface-id*] interfaces. show running-config Displays the operating configuration. For syntax information, use this link to the Cisco IOS Release 12.2 Command Reference listing page: http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/prod\_command \_reference\_list.html Select the Cisco IOS Commands Master List, Release 12.2 to navigate to the command.

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## service-policy (policy-map class configuration)

Use the **service-policy** policy-map class configuration command to configure a quality of service (Q0S) service policy for an input or output policy map or a per-port, per-VLAN policy map. Use the **no** form of this command to disable a service policy as a QoS policy within a policy map.

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

no service-policy policy-map-name

policies are define p class configuratio	
p class configuratio	n
Мо	dification
X Thi	s command was introduced.
pol (su	poport was added for the ability to use this command to assign a child QoS icy to a parent input policy defined by classifying based on VLAN ID poported with only the metro IP access or metro access image). See "Usage idelines."
	EX Thi EG Sup pol (sup

You attach a service policy created in policy-map class configuration to a parent output policy map. This creates hierarchical policy mapping. Use the **service-policy** *policy-map-name* policy-map class configuration command to enter a second-level (child) policy map.

For an input policy map, when you configure classes with classification based on VLAN IDs by using the **match vlan** class-map configuration command, you can use **service-policy** policy-map class configuration command to associate a child QoS policy with that class. This provides the ability to apply independent QoS policies based on the VLAN IDs of the incoming traffic on the port. The per-port, per-vlan ingress QoS feature is supported only using a 2-level hierarchical input policymap, where the parent level defines the VLAN-based classification and the child level defines the QoS policy to be applied to the corresponding VLAN or VLANs. You can configure the child policy with all actions that are available for input policy maps, specifically policing and marking.



Per-port, per-VLAN QoS is supported only when the switch is running the metro IP access or metro access image.

For an output policy map, when **shape average** is also configured on the class **class-default**, you can configure hierarchical policy maps by attaching a single **service-policy** policy-map class command to the class **class-default**. This policy map specifies the service policy for the port-shaped traffic on the port and is the parent policy map. You can configure the child policy with class-based queuing actions by using the **queue-limit** policy map class command and with scheduling actions (by using the **bandwidth**, **shape average**, or **priority** command).

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 define the service policy and to attach it to a parent policy map to set the maximum bandwidth (shape) for an output queue at 90000000 bits per second:

```
Switch(config)# policy-map out-policy-parent
Switch(config-pmap)# class class-default
Switch(config-pmap-c)# shape average 90000000
Switch(config-pmap-c)# service-policy out-policy
Switch(config-pmap-c)# exit
Switch(config-pmap)# exit
```

In this example, the class maps in the child-level policy map specify matching criteria for voice and video traffic, and the child policy map sets the action for input policing each type of traffic. The parent-level policy map specifies the VLANs to which the child policy maps are applied on the specified port.

```
Switch(config)# class-map match-any dscp-23 video
Switch(config-cmap)# match ip dscp 23
Switch(config-cmap)# exit
Switch(config)# class-map match-any dscp-63 voice
Switch(config-cmap)# match ip dscp-63
Switch(config-cmap)# exit
Switch(config)# class-map match-any customer-1-vlan
Switch(config-cmap)# match vlan 100
Switch(config-cmap)# match vlan 200
Switch(config-cmap)# match vlan 300
Switch(config-cmap)# exit
```

```
Note
```

You can also enter the match criteria as match vlan 100 200 300 with the same result.

```
Switch(config)# policy-map child policy-1
Switch(config-pmap)# class dscp-63 voice
Switch(config-pmap-c)# police cir 10000000 bc 50000
Switch(config-pmap-c)# conform-action set-cos-transmit 5
Switch(config-pmap-c)# exceed-action drop
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# set cos 4
Switch(config-pmap-c)# set ip precedence 4
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# exit
```

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

Related	Commands
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Command	Description
class	Defines a traffic classification match criteria for the specified class-map name.
policy-map	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
show policy-map	Displays quality of service (QoS) policy maps.

## set cos

Use the **set cos** policy-map class configuration command to set a Layer 2 class of service (CoS) value in the packet. Use the **no** form of this command to remove traffic marking.

set cos {cos\_value | from-field [table table-map-name]}

**no set cos** {*cos\_value* | *from-field* [**table** *table-map-name*]}

Syntax Description	cos_value	Enter an IEEE 802.1Q class of service/user priority value with which to classify traffic. The range is from 0 to 7.
	from-field	Specific a packet-marking category to be used to set the CoS value of the packet. If you are using a table map for mapping and converting packet-marking values, this establishes the <i>map-from</i> packet-marking category.
		These options are supported:
		• <b>cos</b> —CoS value
		• <b>dscp</b> —Differentiated Services Code Point (DSCP) value.
		• precedence—IP-precedence value
	table	(Optional) Used in conjunction with the <i>from-field</i> keyword. Indicates that the values set in a specified table map are used to set the CoS value
	table-map-name	(Optional) Used in conjunction with the <b>table</b> keyword. Name of the table map used to specify the CoS value. The table map name can be a maximum of 64 alphanumeric characters.
Command Modes	Policy-map class con	figuration
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12-2(25)SEG	Support was added to set multiple marking actions and to use table maps for enhanced packet marking. See "Usage Guidelines."
Usage Guidelines	actions, specifically s added for the ability t table maps for the sau Use the set cos comm	to IOS Release 12.2(25)SEG, you can configure <b>set cos</b> with all other marking <b>set dscp</b> , <b>set precedence</b> , and <b>set qos-group</b> , for the same class. Support was also to configure more than one marking action with enhanced packet marking by using me class. The mark a packet that is being sent to a switch. Switches can der information including a CoS value marking.

You can use the **match cos** class-map configuration command and the **set cos** policy-map class configuration command together to allow switches to interoperate and provide quality of service (QoS) based on the CoS markings. You can also configure Layer 2 to Layer 3 mapping by matching on the CoS value because switches can already match and set CoS values.

If you are using this command to perform enhanced packet marking, you can use the *from-field* packet marking option for mapping and setting the CoS value. The supported *from-field* marking categories are: CoS, DSCP, and IP precedence.

If you specify a *from-field* category, but do not specify the **table** keyword and *table-map-name*, the default action is to copy the value associated with the *from-field* category as the CoS value. For example, if you enter the **set cos precedence** command, the precedence value is copied and used as the CoS value. If you enter the **set cos dscp** command, the DSCP value is copied and used as the CoS value.

#### **Examples**

This example shows how to set all FTP traffic to cos 3:

```
Switch(config)# policy-map policy_ftp
Switch(config-pmap)# class ftp_class
Switch(config-pmap-c)# set cos 3
Switch(config-pmap-c)# exit
```

This example shows how to assign a DSCP to CoS table map to a class:

```
Switch(config)# policy-map inpolicy
Switch(config-pmap)# class class-default
Switch(config-pmap-c)# set cos dscp table dscp-cos-tablemap
Switch(config-pmap)# exit
```

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

Related Commands	Command	Description
	class	Defines a traffic classification match criteria for the specified class-map name.
	policy-map	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
	show policy-map	Displays QoS policy maps.

Use the **set** [**ip**] **dscp** policy-map class configuration command to mark IPv4 traffic by setting a Differentiated Services Code Point (DSCP) value in the type of service (ToS) byte of the packet. Use the **no** form of this command to remove traffic marking.

set [ip] dscp {dscp\_value |from-field [table table-map-name]}

no set [ip] dscp {dscp\_value | from-field [table table-map-name]}



Entering **ip dscp** is the same as entering **dscp**.

Syntax Description	dscp-value	Enter a DSCP value with which to classify traffic. The range is from 0 to 63. You also can enter a mnemonic name for a commonly used value.
	from-field	Specific a packet-marking category to be used to set the DSCP value of the packet. If you are using a table map for mapping and converting packet-marking values, this establishes the <i>map-from</i> packet-marking category.
		These options are supported:
		• <b>cos</b> —class of service (CoS) value
		• <b>dscp</b> —DSCP value.
		• precedence—IP-precedence value
	table	(Optional) Used in conjunction with the <i>from-field</i> keyword. Indicates that the values set in a specified table map are used to set the DSCP value
	table-map-name	(Optional) Used in conjunction with the <b>table</b> keyword. Name of the table map used to specify the DSCP value. The table map name can be a maximum of 64 alphanumeric characters.

**Defaults** No traffic marking is defined.

**Command Modes** Policy-map class configuration

Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12-2(25)SEG	Support was added to set multiple marking actions and to use table maps for enhanced packet marking. See "Usage Guidelines."

class.

# **Usage Guidelines** Beginning with Cisco IOS Release 12.2(25)SEG, you can configure **set dscp** with other marking actions, specifically **set cos** and **set qos-group**, for the same class. Support was also added for the ability to configure more than one marking action with enhanced packet marking by using table maps for the same

You cannot use the **set dscp** command with the **set precedence** command to mark the same packet. DSCP values and IP precedence values are mutually exclusive. A packet can have one value of the other, but not both.

After DSCP bits are set, other quality of service (QoS) features can then operate on the bit settings.

The network gives priority (or some type of expedited handling) to marked traffic. Typically, you set the DSCP value at the edge of the network (or administrative domain) and data is then queued according to the precedence. Class-based weighted fair queuing (CBWFQ) can speed up handling for high-precedence traffic at congestion points. Weighted Tail Drop (WTD) ensures that high-precedence

traffic has lower loss rates than other traffic during times of congestion.

Instead of using numeric values, you can also specify the *dscp-value* by using the reserved keywords **EF**, **AF11**, and **AF12**.

If you are using this command to perform enhanced packet marking, you can use the *from-field* packet marking option for mapping and setting the DSCP value. The supported *from-field* marking categories are: CoS, DSCP, and IP precedence.

If you specify a *from-field* category, but do not specify the **table** keyword and *table-map-name*, the default action is to copy the value associated with the *from-field* category as the DSCP value. For example, if you enter the **set dscp cos** command, the CoS value is copied and used as the DSCP value.

**Examples** This example shows how to set all FTP traffic to DSCP 10:

Switch(config)# policy-map policy\_ftp
Switch(config-pmap)# class ftp\_class
Switch(config-pmap-c)# set dscp 10
Switch(config-pmap-c)# exit

This example shows how to assign a CoS to DSCP table map to a class:

Switch(config)# policy-map inpolicy
Switch(config-pmap)# class class-default
Switch(config-pmap-c)# set dscp cos table cos-dscp-tablemap
Switch(config-pmap)# exit

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

<b>Related Commands</b>	Command	Description
	class	Defines a traffic classification match criteria for the specified class-map name.
	policy-map	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
	show policy-map	Displays QoS policy maps.

# set precedence

Use the **set [ip] precedence** policy-map class configuration command to mark IPv4 traffic by setting an IP-precedence value in the packet. Use the **no** form of this command to remove traffic marking.

set [ip] precedence {precedence\_value | from-field [table table-map-name]}

**no set** [**ip**] **precedence** {*precedence\_value* | *from-field* [**table** *table-map-name*]}



Entering **ip precedence** is the same as entering **precedence**.

Syntax Description	precedence_value	Enter an IPv4 precedence value with which to classify traffic. The range is 0 to 7. You also can enter a mnemonic name for a commonly used value.
	from-field	Specific a packet-marking category to be used to set the precedence value of the packet. If you are using a table map for mapping and converting packet-marking values, this establishes the <i>map-from</i> packet-marking category.
		These options are supported:
		• <b>cos</b> —class of service (CoS) value
		<ul> <li>dscp—Differentiated Services Code Point (DSCP) value.</li> <li>precedence—IP-precedence value</li> </ul>
Defaults	table	(Optional) Used in conjunction with the <i>from-field</i> keyword. Indicates that the values set in a specified table map are used to set the precedence value
	table-map-name	(Optional) Used in conjunction with the <b>table</b> keyword. Name of the table map used to specify the precedence value. The table map name can be a maximum of 64 alphanumeric characters.
	No traffic marking is defined.	
Command Modes	Policy-map class cont	figuration
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12-2(25)SEG	Support was added to set multiple marking actions and to use table maps for enhanced packet marking. See "Usage Guidelines."

## **Usage Guidelines** Beginning with Cisco IOS Release 12.2(25)SEG, you can configure set precedence with other marking

actions, specifically **set cos** and **set qos-group**, for the same class. Support was also added for the ability to configure more than one marking action with enhanced packet marking by using table maps for the same class.

You cannot use the **set precedence** command with the **set dscp** command to mark the same packet. DSCP values and IP precedence values are mutually exclusive. A packet can have one value of the other, but not both.

After precedence bits are set, other quality of service (QoS) features can then operate on the bit settings.

The network gives priority (or some type of expedited handling) to marked traffic. Typically, you set the precedence value at the edge of the network (or administrative domain) and data is then queued according to the precedence. Class-based weighted fair queuing (CBWFQ) can speed up handling for high-precedence traffic at congestion points. Weighted Tail Drop (WTD) ensures that high-precedence traffic has lower loss rates than other traffic during times of congestion.

Instead of using numeric values, you can also specify the *dscp-value* by using the reserved keywords EF, AF11, and AF12.

If you are using this command to perform enhanced packet marking, you can use the *from-field* packet marking option for mapping and setting the precedence value. The supported *from-field* marking categories are: CoS, DSCP, and IP precedence.

If you specify a *from-field* category, but do not specify the **table** keyword and *table-map-name*, the default action is to copy the value associated with the *from-field* category as the precedence value. For example, if you enter the **set precedence cos** command, the CoS value is copied and used as the precedence value.

#### Examples

This example shows how to give all FTP traffic an IP precedence value of 5:

```
Switch(config)# policy-map policy_ftp
Switch(config-pmap)# class ftp_class
Switch(config-pmap-c)# set precedence 5
Switch(config-pmap-c)# exit
```

This example shows how to assign a CoS to precedence table map to a class:

```
Switch(config)# policy-map inpolicy
Switch(config-pmap)# class class-default
Switch(config-pmap-c)# set precedence cos table cos-prec-tablemap
Switch(config-pmap)# exit
```

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

Related Commands	Command	Description
	class	Defines a traffic classification match criteria for the specified class-map name.
	policy-map	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
	show policy-map	Displays QoS policy maps.

## set qos-group

Use the **set qos-group** policy-map class configuration command to set a a quality of service (QoS) group identifier that can be used later to classify packets. Use the **no** form of this command to remove the group identifier.

set qos-group value

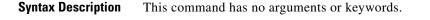
no set qos-group value

Syntax Description	value	Set the QoS group value to use to classify traffic. The range is from 0 to 99.
Defaults	No traffic marking	is defined.
Command Modes	Policy-map class co	onfiguration
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12.2(25)SEG	The number of supported QoS groups was increased to 100. Support was added to set multiple marking actions and to use table maps for enhanced packet marking. See "Usage Guidelines."
Usage Guidelines	marking actions, spe added for the ability table maps for the s	
	Use this command to associate a QoS group value with a traffic flow as it enters the switch, which can then be used in an output policy map to identify the flow.	
	A maximum of 100	QoS groups (0 through 99) is supported on the switch.
	To return to policy-1 use the <b>end</b> comma	map configuration mode, use the <b>exit</b> command. To return to privileged EXEC mode, nd.
Examples	-	s how to set all FTP traffic to QoS group 5:
	Switch(config-pma	<pre>olicy-map policy_ftp p)# class ftp_class p-c)# set qos-group 5 p-c)# exit</pre>
	You can verify your	r settings by entering the show policy-map privileged EXEC command.

<b>Related Commands</b>	Command	Description
	class	Defines a traffic classification match criteria for the specified class-map name.
	policy-map	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
	show policy-map	Displays QoS policy maps.

## setup

setup



Command Modes Privileged EXEC

Command History	Release	Modification
	12.2(25)EX	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

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 <b>setup</b> command:
	Switch# <b>setup</b> System Configuration Dialog
	Continue with configuration dialog? [yes/no]: <b>yes</b>
	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]: <b>yes</b> Configuring global parameters:

```
Enter host name [Switch]: host-name
  The enable secret is a password used to protect access to
  privileged EXEC and configuration modes. This password, after
  entered, becomes encrypted in the configuration.
  Enter enable secret: enable-secret-password
  The enable password is used when you do not specify an
  enable secret password, with some older software versions, and
  some boot images.
  Enter enable password: enable-password
  The virtual terminal password is used to protect
  access to the router over a network interface.
  Enter virtual terminal password: terminal-password
  Configure SNMP Network Management? [no]: yes
  Community string [public]:
Current interface summary
Any interface listed with OK? value "NO" does not have a valid configuration
Interface
                           IP-Address
                                           OK? Method Status
                                                                             Protocol
Vlan1
                           172.20.135.202 YES NVRAM up
                                                                             up
GigabitEthernet0/1
                           unassigned
                                           YES unset up
                                                                             up
GigabitEthernet0/2
                           unassigned
                                           YES unset up
                                                                             down
<output truncated>
Port-channel1
                           unassigned
                                           YES unset up
                                                                             down
Enter interface name used to connect to the
management network from the above interface summary: vlan1
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: ip_address
Subnet mask for this interface [255.0.0.0]: subnet_mask
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
1
no ip routing
!
interface GigabitEthernet0/1
no ip address
interface GigabitEthernet0/2
no ip address
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.
```

#### setup

[2] Save this configuration to nvram and exit.

Enter your selection [2]:

Related Commands	Command	Description
	show running-config	Displays the operating configuration. For syntax information, use this link to the Cisco IOS Release 12.2 Command Reference listing
		page: http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/prod_co mmand_reference_list.html Select the Cisco IOS Commands Master List, Release 12.2 to navigate to the command.
	show version	Displays version information for the hardware and firmware.

# shape average

Use the **shape average** policy-map class configuration command to configure class-based shaping by specifying the average traffic shaping rate. Use the command with the class **class-default** to set port shaping. Use the **no** form of this command to remove traffic shaping.

**shape average** *target bps* 

no shape average target bps

Syntax Description	target bps	Target average bit rate in bits per second (bps). The range is from 64000 to 1000000000.
Defaults	No traffic shaping is	s defined.
Command Modes	Policy-map class co	nfiguration
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12.2(25)SEG	Support was added to configure traffic shaping in the <b>class-default</b> of an output policy map.
Usage Guidelines	in input policy maps Traffic shaping limi class or <b>class-defau</b> Configuring traffic s attached to an interf	ts the rate of transmission of data. Configuring traffic shaping for a user-defined <b>lt</b> for class-based shaping sets the peak information rate (PIR) for that class. shaping for the class <b>class-default</b> when it is the only class in the policy map that is face sets the PIR for the interface (port shaping).
	-	re <b>shape average</b> in a class that includes priority queueing (configured with the class configuration command).
		command uses a default queue limit for the class. You can change the queue limit by <b>it</b> policy-map class command, overriding the default that is set by the <b>shape average</b>
		<b>bandwidth</b> policy-map class configuration command to configure class-based ng (CBWFQ) and the <b>shape average</b> command to configure traffic shaping for the
		ierarchical policy maps by attaching the <b>service-policy</b> policy-map class command <b>fault</b> only when <b>shape average</b> is also configured on the class <b>class-default</b> .
	To return to policy-nuse the <b>end</b> comman	nap configuration mode, use the <b>exit</b> command. To return to privileged EXEC mode, nd.

## Examples

This example shows how to configure traffic shaping for outgoing traffic on a Fast Ethernet port so that *outclass1*, *outclass2*, and *outclass3* get a maximum of 50, 20, and 10 Mbps of the buffer size. The class **class-default** gets the remaining bandwidth.

```
Switch(config)# policy-map out-policy
Switch(config-pmap)# class classout1
Switch(config-pmap-c)# shape average 50000000
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# shape average 20000000
Switch(config-pmap-c)# shape average 20000000
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# shape average 10000000
Switch(config-pmap-c)# exit
Switch(config-pmap-c)# exit
Switch(config-pmap)# exit
Switch(config-pmap)# exit
Switch(config)# interface fastethernet 0/1
Switch(config-if)# service-policy out out-policy
```

This example shows how to configure port shaping by configuring a hierarchical policy map that shapes a port to 90 Mbps, allocated according to the *out-policy* policy map configured in the previous example.

```
Switch(config)# policy-map out-policy-parent
Switch(config-pmap)# class class-default
Switch(config-pmap-c)# shape average 90000000
Switch(config-pmap-c)# service-policy out-policy
Switch(config-pmap-c)# exit
Switch(config-pmap)# exit
```

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

Related Commands	Command	Description
	class	Defines a traffic classification match criteria for the specified class-map name.
	policy-map	Creates or modifies a policy map that can be attached to multiple ports to specify a service policy.
	show policy-map	Displays QoS policy maps.
	<pre>show policy-map interface [interface-id]</pre>	Displays policy maps configured on the specified interface or on all interfaces.

# 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	name	(Optional) Name of the ACL.		
	number	(Optional) ACL number. The range is 1 to 2699.		
	hardware counters	(Optional) Display global hardware ACL statistics for switched and		
		routed packets.		
	ірс	(Optional) Display Interprocess Communication (IPC) protocol access-list configuration download information.		
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .		
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .		
	include	(Optional) Display includes lines that match the specified <i>expression</i> .		
	expression	Expression in the output to use as a reference point.		
Note	Though visible in the con	nmand-line help strings, the <b>rate-limit</b> keywords are not supported.		
Command Modes	Privileged EXEC			
Command History	Release	Modification		
	12.2(25)EX	This command was introduced.		
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.			
	-	itive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> are displayed.		
Examples	This is an example of out	put from the show access-lists command:		

```
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 host 20.20.10.10 precedence routine
```

#### 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
                        All frame count: 2121
     Forwarded:
                         All bytes count: 180762
     Forwarded:
     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
                         All frame count: 0
    Drop:
     Drop:
                         All bytes count: 0
                       All frame count: 0
All bytes count: 0
     Drop And Log:
     Drop And Log:
    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
                         All frame count: 0
    Drop:
                         All bytes count: 0
     Drop:
     Drop And Log:
                         All frame count: 0
     Drop And Log:
                         All bytes count: 0
     Bridge Only:
                         All frame count: 0
                         All bytes count: 0
     Bridge Only:
     Bridge Only And Log: All frame count: 0
```

Bridge Only And Log:	A11	bytes	count:	0
Forwarding To CPU:	A11	frame	count:	0
Forwarding To CPU:	A11	bytes	count:	0
Forwarded:	A11	frame	count:	514434
Forwarded:	A11	bytes	count:	39048748
Forwarded And Log:	A11	frame	count:	0
Forwarded And Log:	A11	bytes	count:	0

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

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

Syntax Description	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
- •	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EX	XEC
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines		<b>archive download-sw</b> privileged EXEC command to download an image to a TFTP server, the <b>archive download-sw</b> command shows the status of the download.
	-	are case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> ayed, but the lines that contain <i>Output</i> are displayed.
Examples	These are exa	amples of output from the show archive status command:
		<b>v archive status</b> grade in progress
		w archive status grade in progress
		w archive status tracting the image
		<b>w archive status</b> ifying software
		w archive status rade completed. Reload pending
Related Commands	Command	Description
	archive dow	<b>nload-sw</b> 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 metro IP access or metro access image.

Syntax Description	acl-name	(Optional) Nan	ne of the ACL.
	begin	(Optional) Disp	play begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Disp	play excludes lines that match the <i>expression</i> .
	include	(Optional) Disp	play includes lines that match the specified expression.
	expression	Expression in t	he output to use as a reference point.
Command Modes	User EXEC		
Command History	Release	Mod	ification
	12.2(25)EX	This	command was introduced.
Examples	Switch> <b>show</b> ARP access l permit i	<b>arp access-lis</b> ist rose	0.0.255 mac any
Related Commands	Command		Description
	arp access-li	st	Defines an ARP ACL.
	deny (ARP a configuratio		Denies an ARP packet based on matches against the Dynamic Host Configuration Protocol (DHCP) bindings.
	ip arp inspe	ction filter vlan	Permits ARP requests and responses from a host configured with a static IP address.
	permit (ARI configuratio		Permits an ARP packet based on matches against the DHCP bindings.

# 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	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	1	sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> are displayed.
Usage Guidelines Examples	are not displayed, bu	

Table 2-5show boot Field Descriptions

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

Field	Description
Private Config file	Displays the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.
Enable Break	Displays whether a break during booting 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.

Table 2-5	show boot Field Descriptions (continued)
-----------	--

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

TDR is supported only on the copper Ethernet 10/100 ports on the Cisco ME switch.

Syntax Description	interface-id	Specify the i	interface on which TD	R was run.			
	begin	(Optional) D	Display begins with the	line that mat	ches the <i>expression</i> .		
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .					
	include	(Optional) Display includes lines that match the specified <i>expression</i> .					
	expression						
Command Modes	Privileged EX	EC					
Command History	Release	Mo	dification				
				uced			
Usage Guidelines	small form-fac	ted only on cop	SFP)-module ports. Fo	orts on the Ci	sco ME switch. It is not supported or nation about TDR, see the software		
Usage Guidelines	TDR is suppor small form-fac configuration Expressions ar	ted only on cop tor pluggable (s guide for this re e case sensitive	oper Ethernet 10/100 p SFP)-module ports. Fo elease.	orts on the Cis or more inforn enter   <b>exclude</b>			
Usage Guidelines Examples	TDR is suppor small form-fac configuration Expressions an do not appear, This is an exan a Cisco ME sy	tted only on cop otor pluggable (s guide for this re e case sensitive but the lines the nple of output f vitch:	oper Ethernet 10/100 p SFP)-module ports. Fo elease. 2. For example, if you e at contain <i>Output</i> appe	orts on the Cir or more inforn enter   <b>exclude</b> ear. <b>iagnostics td</b>	nation about TDR, see the software e <b>output</b> , the lines that contain <i>outpu</i> <b>r interface</b> <i>interface-id</i> command or		
-	TDR is suppor small form-fac configuration Expressions an do not appear, This is an exan a Cisco ME sw Switch# <b>show</b> TDR test last	ted only on cop stor pluggable (s guide for this re e case sensitive but the lines the mple of output f vitch: <b>cable-diagnos</b> run on: Marc	oper Ethernet 10/100 p SFP)-module ports. For elease. 2. For example, if you e at contain <i>Output</i> apped from the <b>show cable-d</b> etics tdr interface a sch 01 18:14:44	orts on the Cir or more inforn enter   <b>exclude</b> ear. <b>iagnostics td</b>	nation about TDR, see the software e <b>output</b> , the lines that contain <i>outpu</i> <b>r interface</b> <i>interface-id</i> command or		
-	TDR is suppor small form-fac configuration Expressions an do not appear, This is an exan a Cisco ME sw Switch# <b>show</b> TDR test last	ted only on cop stor pluggable (s guide for this re e case sensitive but the lines the mple of output f vitch: <b>cable-diagnos</b> run on: Marc	oper Ethernet 10/100 p SFP)-module ports. Fo elease. 2. For example, if you e at contain <i>Output</i> appe from the <b>show cable-d</b>	orts on the Cir or more inforn enter   <b>exclude</b> ear. <b>iagnostics td</b> fastethernet	nation about TDR, see the software e <b>output</b> , the lines that contain <i>outpu</i> <b>r interface</b> <i>interface-id</i> command or		

Table 2-6 lists the descriptions of the fields in 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:				
	• The cable is properly connected, the link is up, and the interface speed is 100 Mbps.				
	• The cable is open.				
	• The cable has a short.				
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:				
	• Normal—The pair of wires is properly connected.				
	• Not completed—The test is running and is not completed.				
	• Not supported—The interface does not support TDR.				
	• Open—The pair of wires is open.				
	• Shorted—The pair of wires is shorted.				
	• ImpedanceMis—The impedance is mismatched.				
	• Short/Impedance Mismatched—The impedance mismatched or the cable is short.				
	• InProgress—The diagnostic test is in progress				

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

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

```
Switch# show interface fastethernet0/1 fastethernet0/1 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 fastethernet0/1 % TDR test was never issued on fa0/1

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

% TDR test is not supported on switch 1

<b>Related Commands</b>	Command	Description
	test cable-diagnostics tdr	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	class-map-name	<i>p-name</i> (Optional) Display the contents of the specified class map.			
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .			
	exclude	(Optional) Display excludes lines that match the expression.			
	include	(Optional) Display includes lines that match the specified expression.			
	<i>expression</i> Expression in the output to use as a reference point.				
Command Modes	User EXEC				
Command History	Release	Modification			
	10.0(05) EX				
Usage Guidelines	-	This command was introduced. se sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> are displayed.			
Usage Guidelines Examples	Expressions are cas are not displayed, l	se sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i>			
	Expressions are cas are not displayed, b This is an example Switch> <b>show clas</b> Class Map match-a	se sensitive. For example, if you enter <b>  exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> are displayed. of output from the <b>show class-map</b> command:			
	Expressions are cas are not displayed, b This is an example Switch> <b>show clas</b> Class Map match-a Match access-c Class Map match- Match any	se sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> are displayed. of output from the <b>show class-map</b> command: <b>ss-map</b> all videowizard_10-10-10-10 (id 2) group name videowizard_10-10-10-10 -any class-default (id 0) -all dscp5 (id 3)			
Examples	Expressions are cas are not displayed, b This is an example Switch> <b>show clas</b> Class Map match-a Match access-g Class Map match- Match any Class Map match- Match ip dscp	se sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> are displayed. of output from the <b>show class-map</b> command: <b>ss-map</b> all videowizard_10-10-10 (id 2) group name videowizard_10-10-10 -any class-default (id 0) -all dscp5 (id 3) 5			
	Expressions are cas are not displayed, b This is an example Switch> show class Class Map match-a Match access-c Class Map match- Match any Class Map match- Match ip dscp	se sensitive. For example, if you enter l exclude output, the lines that contain output but the lines that contain Output are displayed. of output from the show class-map command: ss-map all videowizard_10-10-10 (id 2) group name videowizard_10-10-10-10 -any class-default (id 0) -all dscp5 (id 3) 5 Description			
Examples	Expressions are cas are not displayed, b This is an example Switch> <b>show clas</b> Class Map match-a Match access-g Class Map match- Match any Class Map match- Match ip dscp	se sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> are displayed. of output from the <b>show class-map</b> command: <b>ss-map</b> all videowizard_10-10-10 (id 2) group name videowizard_10-10-10 -any class-default (id 0) -all dscp5 (id 3) 5			

# 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	begin	(Optional) Display begins with the line that matches the <i>expression</i> .						
_	exclude	(Optional) Display excludes lines that match the <i>expression</i> .						
	include	(Optional) Display includes lines that match the specified <i>expression</i> .						
	expression	· • •			÷ •			
		<i>expression</i> Expression in the output to use as a reference point.						
Command Modes	Privileged EXEC							
Command History	Release	Release Modification						
•	12.2(25)EX			as introduce	d.			
Usage Guidelines	This display provid troubleshooting the		on that mig	ht be useful f	for Cisco technical support representatives			
-	are not displayed, b	but the lines	that contain	<i>Output</i> are d				
Examples	This is a partial out Switch# show cont				lers cpu-interface command:			
	cpu-queue-frames		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
                              0000BFFF
MicRxFifosReady
MicTimeOutPeriod:
                      FrameTOPeriod: 00000EA6 DirectTOPeriod: 00004000
<output truncated>
MicTransmitFifoInfo:
Fifo0:
        StartPtrs:
                       038C2800
                                      ReadPtr:
                                                      038C2C38
       WritePtrs:
                      038C2C38
                                      Fifo_Flag:
                                                      8A800800
       Weights:
                      001E001E
Fifol: StartPtr:
                      03A9BC00
                                      ReadPtr:
                                                      03A9BC60
       WritePtrs:
                      03A9BC60
                                      Fifo_Flag:
                                                      89800400
       writeHeaderPtr: 03A9BC60
                                                      038C88E0
Fifo2: StartPtr: 038C8800
                                      ReadPtr:
       WritePtrs:
                      038C88E0
                                      Fifo_Flag:
                                                      88800200
       writeHeaderPtr: 038C88E0
Fifo3: StartPtr:
                      03C30400
                                      ReadPtr:
                                                      03C30638
                   03C30638
       WritePtrs:
                                      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
       StartPtr:
                       03BF8400
                                      ReadPtr:
                                                      03BF87F0
Fifo6:
       WritePtrs:
                       03BF87F0
                                      Fifo_Flag:
                                                      89800400
```

<output truncated>

#### **Related Commands**

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

L

## 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	interface-id	The physical interface (including type, module, and port number).				
	phy	(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.				
	detail	(Optional) Display details about the PHY internal registers.				
	port-asic	(Optional) Display information about the port ASIC internal registers.				
	configuration	Display port ASIC internal register configuration.				
	statistics	Display port ASIC statistics, including the Rx/Sup Queue and miscellaneous statistics.				
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .				
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .				
	I include (Optional) Display includes lines that match the specified <i>expression</i>					
	expression	Expression in the output to use as a reference point.				
Command Modes	Privileged EXEC	(only supported with the <i>interface-id</i> keywords in user EXEC mode)				
Command History	Release	Modification				
	12.2(25)EX	This command was introduced.				
Usage Guidelines	This display witho	but keywords provides traffic statistics, basically the RMON statistics for all interfaces d interface.				
	1	the <b>phy</b> or <b>port-asic</b> keywords, the displayed information is useful primarily for Cisco				
		representatives troubleshooting the switch.				
	*	ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> are displayed.				

#### Examples

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

#### Switch# show controllers ethernet-controller gigabitethernet0/1

SWILCH# BI	ow concrotters echernet-conci	.orrer g.	Igabitethernet0/1
Transmit G	igabitEthernet0/1	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		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		
-	7 collision frames		Minimum size frames
-	8 collision frames		65 to 127 byte frames
	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
	14 collision frames		Pause frames
	15 collision frames	0	Symbol error frames
	Excessive collisions		
	Late collisions		Invalid frames, too large
	VLAN discard frames		Valid frames, too large
	Excess defer frames		Invalid frames, too small
	64 byte frames	0	Valid frames, too small
	127 byte frames		
	255 byte frames		Too old frames
	511 byte frames		Valid oversize frames
	1023 byte frames		System FCS error frames
	1518 byte frames	0	RxPortFifoFull drop frame
	Too large frames		
0	Good (1 coll) frames		

#### Table 2-7Transmit 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.

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.

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

1. CFI = Canonical Format Indicator

#### Table 2-8 Receive Field Descriptions

Field	Description
Bytes	The total amount of memory (in bytes) used by frames received on an interface, including the $FCS^1$ 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.

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 $MTU^2$ size (including the FCS bits and excluding the frame header) and that have either an FCS error or an alignment error.
Valid frames, too large	The number of frames received on an interface that are larger than the maximum allowed frame size.
Invalid frames, too small	The number of frames received that are smaller than 64 bytes (including the FCS bits and excluding the frame header) and that have either an FCS error or an alignment error.
Valid frames, too small	The number of frames received on an interface that are smaller than 64 bytes (or 68 bytes for VLAN-tagged frames) and that have valid FCS values. The frame size includes the FCS bits but excludes the frame header bits.
Too old frames	The number of frames dropped on the ingress port because the packet aged out.
Valid oversize frames	The number of frames received on an interface that are larger than the maximum allowed frame size and have valid FCS values. The frame size includes the FCS value but does not include the VLAN tag.

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

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

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

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-cor	ntrol	ler gi	.gabite	thernet0/2	2 phy
Control Register	:	0001 0	001 01	00 0000	
Control STATUS	:	0111	1001 0	100 1001	
Phy ID 1	:	0000	0001 0	100 0001	
Phy ID 2	:	0000	1100 0	010 0100	
Auto-Negotiation Advertisement	:	0000	0011 1	110 0001	
Auto-Negotiation Link Partner	:	0000	0000 0	000 0000	
Auto-Negotiation Expansion Reg	:	0000	0000 0	000 0100	
Next Page Transmit Register	:	0010	0000 0	000 0001	
Link Partner Next page Registe	:	0000	0000 0	000 0000	
1000BASE-T Control Register	:	0000	1111 0	000 0000	
1000BASE-T Status Register	:	0100	0000 0	000 0000	
Extended Status Register	:	0011	0000 0	000 0000	
PHY Specific Control Register	:	0000	0000 0	111 1000	
PHY Specific Status Register	:	1000	0001 0	100 0000	
Interrupt Enable	:	0000	0000 0	000 0000	
Interrupt Status	:	0000	0000 0	100 0000	
Extended PHY Specific Control	:	0000	1100 0	110 1000	
Receive Error Counter	:	0000	0000 0	000 0000	
Reserved Register 1	:	0000	0000 0	000 0000	
Global Status	:	0000	0000 0	000 0000	
LED Control	:	0100	0001 0	000 0000	
Manual LED Override	:	0000	1000 0	010 1010	
Extended PHY Specific Control	:	0000	0000 0	001 1010	
Disable Receiver 1	:	0000	0000 0	000 1011	
Disable Receiver 2	:	1000	0000 0	000 0100	
Extended PHY Specific Status	:	1000	0100 1	000 0000	
Auto-MDIX	:	On	[Admin	State=1	Flags=0x00052248]

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

Switch# show controllers ethernet-controller port-asic configuration

\_\_\_\_\_ PortASIC 0 Registers \_\_\_\_\_ DeviceType : 000101BC : 00000000 Reset PmadMicConfig : 00000001 PmadMicDiag : 0000003 SupervisorReceiveFifoSramInfo: 000007D0 000007D0 40000000SupervisorTransmitFifoSramInfo: 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	FFFFFFF
		FF0FFF00	86020000	5555FFFF	00000000
StackRacInfo	:	73001630	0000003	7F001644	0000003
		24140003	FD632B00	18E418E0	FFFFFFF
StackControlStatus	:	18E418E0			
stackControlStatusMask	:	FFFFFFF			
TransmitBufferFreeListInfo	:	00000854	00000800	00000FF8	00000000
		0000088A	0000085D	00000FF8	00000000
TransmitRingFifoInfo	:	00000016	00000016	40000000	00000000
		0000000C	0000000C	40000000	00000000
TransmitBufferInfo	:	00012000	00000FFF	00000000	00000030
TransmitBufferCommonCount	:	00000F7A			
TransmitBufferCommonCountPeak	:	0000001E			
TransmitBufferCommonCommonEmpty	:	000000FF			
NetworkActivity	:	00000000	00000000	00000000	02400000
DroppedStatistics	:	00000000			
FrameLengthDeltaSelect	:	00000001			
SneakPortFifoInfo	:	00000000			
MacInfo	:	0EC0801C	0000001	0EC0801B	00000001
		00C0001D	0000001	00C0001E	00000001

<output truncated>

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

	ow controllers ethernet-controller	-
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
	RxQ-1, wt-0 enqueue frames	0 RxQ-1, wt-0 drop frames
	RxQ-1, wt-1 enqueue frames	0 RxQ-1, wt-1 drop frames
2836036	RxQ-1, wt-2 enqueue frames	0 RxQ-1, wt-2 drop frames
0	RxQ-2, wt-0 enqueue frames	0 RxQ-2, wt-0 drop frames
	RxQ-2, wt-1 enqueue frames	0 RxQ-2, wt-1 drop frames
158377	RxQ-2, wt-2 enqueue frames	0 RxQ-2, wt-2 drop frames
0	RxQ-3, wt-0 enqueue frames	0 RxQ-3, wt-0 drop frames
0	RxQ-3, wt-1 enqueue frames	0 RxQ-3, wt-1 drop frames
0	RxQ-3, wt-2 enqueue frames	0 RxQ-3, wt-2 drop frames
15	TxBufferFull Drop Count	0 Rx Fcs Error Frames
0	TxBufferFrameDesc BadCrc16	0 Rx Invalid Oversize Frames
0	TxBuffer Bandwidth Drop Cou	0 Rx Invalid Too Large Frame
0	TxQueue Bandwidth Drop Coun	0 Rx Invalid Too Large Frame
0	TxQueue Missed Drop Statist	0 Rx Invalid Too Small Frame
74	RxBuffer Drop DestIndex Cou	0 Rx Too Old Frames
0	SneakQueue Drop Count	0 Tx Too Old Frames
0	Learning Queue Overflow Fra	0 System Fcs Error Frames
0	Learning Cam Skip Count	
15	Sup Queue 0 Drop Frames	0 Sup Queue 8 Drop Frames
0	Sup Queue 1 Drop Frames	0 Sup Queue 9 Drop Frames
0	Sup Queue 2 Drop Frames	0 Sup Queue 10 Drop Frames

Switch# show controllers ethernet-controller port-asic statistics

0	Sup Qı	ieue 3	Drop	Frames	0	Sup	Queue	11	Drop	Frames
0	Sup Qu	ieue 4	Drop	Frames	0	Sup	Queue	12	Drop	Frames
0	Sup Qu	ieue 5	Drop	Frames	0	Sup	Queue	13	Drop	Frames
0	Sup Qı	ieue 6	Drop	Frames	0	Sup	Queue	14	Drop	Frames
0	Sup Qı	ieue 7	Drop	Frames	0	Sup	Queue	15	Drop	Frames
==========	======	=====	=====		===			===:	=====	
PortASIC 1	Statis	stics								
0	RxQ-0,	wt-0	enque	eue frames	0	RxQ·	-0, wt-	-0 (	drop :	Erames
	~ ·		-	eue frames eue frames		~	-0, wt- -0, wt-		-	
52	 RxQ-0,	wt-1	enque		0	RxQ-		-1 (	drop :	Erames

<output truncated>

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

# show controllers tcam

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

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

Syntax Description	asic	(Optional) Display port ASIC TCAM information.			
	number	(Optional) Display information for the specified port ASIC number. The range is from 0 to 15.			
	detail	(Optional) Display detailed TCAM register information.			
	begin	<b>begin</b> (Optional) Display begins with the line that matches the <i>expression</i> .			
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .			
	include	(Optional) Display includes lines that match the specified expression.			
	expression	Expression in the output to use as a reference point.			
Command Modes	Privileged	EXEC			
Command History	Release	Modification			
	12.2(25)E	X This command was introduced.			
Jsage Guidelines	-	y provides information that might be useful for Cisco technical support representatives oting the switch.			
	troublesho Expression do not app				
	troublesho Expression do not app This is an o	oting the switch. s are case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i> ear, but the lines that contain <i>Output</i> appear.			
	troublesho Expression do not app This is an o	boting the switch. s are case sensitive. For example, if you enter I <b>exclude output</b> , the lines that contain <i>output</i> ear, but the lines that contain <i>Output</i> appear. example of output from the <b>show controllers tcam</b> command: <b>now controllers tcam</b>			
	troublesho Expression do not app This is an o Switch# sl	by the switch. Is are case sensitive. For example, if you enter <b>  exclude output</b> , the lines that contain <i>output</i> ear, but the lines that contain <i>Output</i> appear. Example of output from the <b>show controllers tcam</b> command: how controllers tcam			
Usage Guidelines Examples	troublesho Expression do not app This is an o Switch# sl 	beting the switch. Is are case sensitive. For example, if you enter   exclude output, the lines that contain output ear, but the lines that contain Output appear. Example of output from the show controllers tcam command: how controllers tcam gisters 00B30103 000B0040 0000000			

```
0000000_0000000
 HRR3:
 HRR4:
      0000000_0000000
 HRR5: 0000000_0000000
 HRR6: 0000000_0000000
 HRR7: 00000000_0000000
<output truncated>
 GMR31: FF_FFFFFFFFFFFFFFFF
 TCAM related PortASIC 1 registers
LookupType:
                   89A1C67D_24E35F00
LastCamIndex:
                   0000FFE0
LocalNoMatch:
                   000069E0
ForwardingRamBaseAddress:
                    00022A00 0002FE00 00040600 0002FE00 0000D400
                    00000000 003FBA00 00009000 00009000 00040600
                    0000000 00012800 00012900
```

<b>Related Commands</b>	Command	Description
	show controllers cpu-interface	Displays the state of the CPU network ASIC and send and receive statistics for packets reaching the CPU.
	show controllers ethernet-controller	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				
	interface-id	(Optional) ID of	the switch interface.	
	begin	(Optional) Displa	by begins with the line that matches the specified <i>expression</i> .	
	exclude	(Optional) Displa	y excludes lines that match the specified expression.	
	include	(Optional) Displa	y includes lines that match the specified <i>expression</i> .	
	expression	Expression in the	output to use as a reference point.	
Command Modes	User EXEC			
command History	Release	Modif	ication	
	12.2(25)EX	This o	command was introduced.	
Examples	This is an example of output from the <b>show controllers utilization</b> command. Switch> <b>show controllers utilization</b> Port Receive Utilization Transmit Utilization			
	Fa0/1	0	0	
	Fa0/2	0	0	
	Fa0/2 Fa0/3	0		
	Fa0/3 Fa0/4	0 0	0 0 0	
	Fa0/3 Fa0/4 Fa0/5	0 0 0	0 0 0 0	
	Fa0/3 Fa0/4	0 0	0 0 0	
	Fa0/3 Fa0/4 Fa0/5 Fa0/6	0 0 0 0	0 0 0 0 0	
	Fa0/3 Fa0/4 Fa0/5 Fa0/6 Fa0/7 <output td="" trund<=""><td>0 0 0 0 cated&gt; ve Bandwidth Perce</td><td>0 0 0 0 0</td></output>	0 0 0 0 cated> ve Bandwidth Perce	0 0 0 0 0	
	Fa0/3 Fa0/4 Fa0/5 Fa0/6 Fa0/7 <output trund<br="">Switch Receiv Switch Transm</output>	0 0 0 0 cated> ve Bandwidth Perce	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	Fa0/3 Fa0/4 Fa0/5 Fa0/6 Fa0/7 <output trund<br="">Switch Receip Switch Transp Switch Fabrid</output>	0 0 0 0 cated> ve Bandwidth Perce nit Bandwidth Perc c Percentage Utili	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	

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.

## Table 2-9 show controllers utilization Field Descriptions

## **Related Commands**

Command	Description
show controllers ethernet-controller	Displays the interface internal registers.

## show cpu traffic qos

Use the **show cpu traffic qos** user EXEC command to display the Quality of Service (QoS) marking parameters for CPU-generated traffic.

show cpu traffic qos [ | {begin | exclude | include} expression]

	1 1 !	(Outlined) Display to the interval of the line dust metal as the
Syntax Description	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(44)SE	This command was introduced.
Examples	This is an examp	le of output from the <b>show cpu traffic qos</b> command:
	Switch> <b>show cp</b> QOS - CPU Gener	ated Traffic
	=	ated Traffic
	QOS - CPU Gener  Cos DSCP	ated Traffic  2 30
	QOS - CPU Gener  Cos DSCP Precedence	ated Traffic  2 30 3
	QOS - CPU Gener  Cos DSCP	ated Traffic  2 30
Related Commands	QOS - CPU Gener  Cos DSCP Precedence	ated Traffic  2 30 3

# show dot1q-tunnel

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

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

This command is visible only when the switch is running the metro IP access or metro access image.

Syntax Description		
	interface interface-id	(Optional) Specify the interface for which to display IEEE 802.1Q tunneling information. Valid interfaces include physical ports and port channels.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Examples	These are examples of a	output from the <b>show dot1q-tunnel</b> commands:
	1	suput from the show dotrq-tunnel commands.
	Switch> <b>show dot1q-tu</b> dot1q-tunnel mode LAN	innel J Port(s)
	Switch> show dot1q-tu	innel J Port(s)
	Switch> show dotlq-tu dotlq-tunnel mode LAN Gi0/1 Gi0/2 Gi0/3 Gi0/6 Po2 Switch> show dotlq-tu dotlq-tunnel mode LAN	<pre>immel interface gigabitethernet0/1 I Port(s)</pre>
	Switch> show dotlq-tu dotlq-tunnel mode LAN Gi0/1 Gi0/2 Gi0/3 Gi0/6 Po2 Switch> show dotlq-tu	<pre>immel interface gigabitethernet0/1 I Port(s)</pre>
Related Commands	Switch> show dotlq-tu dotlq-tunnel mode LAN Gi0/1 Gi0/2 Gi0/3 Gi0/6 Po2 Switch> show dotlq-tu dotlq-tunnel mode LAN	<pre>immel interface gigabitethernet0/1 I Port(s)</pre>
Related Commands	Switch> show dotlq-tu dotlq-tunnel mode LAN  Gi0/1 Gi0/2 Gi0/3 Gi0/6 Po2 Switch> show dotlq-tu dotlq-tunnel mode LAN  Gi0/1	<pre>mmel mnel interface gigabitethernet0/1 N Port(s) Description</pre>
Related Commands	Switch> show dotlq-tu dotlq-tunnel mode LAN  Gi0/1 Gi0/2 Gi0/3 Gi0/6 Po2 Switch> show dotlq-tu dotlq-tunnel mode LAN  Gi0/1	Immel         N Port(s)         Immel interface gigabitethernet0/1         N Port(s)         Description         ative       Displays 802.1Q native VLAN tagging status.

## show dot1x

Use the **show dot1x** privileged EXEC command to display IEEE 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	all	(Optional) Display the IEEE 802.1x status for all ports.
	interface interface-id	(Optional) Display the IEEE 802.1x status for the specified port (including type, module, and port number).
	statistics interface interface-id	(Optional) Display IEEE 802.1x statistics for the specified port (including type, module, and port number).
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.

## Command Modes Privileged EXEC

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

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

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 dot	Lx	
Sysauthcontrol		= Enabled
Dot1x Protocol Ve	ersion	= 1
Dot1x Oper Contro	olled Directions	= Both
Dot1x Admin Controlled Directions = Both		
Switch# show dot?	lx all	
Dot1x Info for in	nterface GigabitE	thernet0/1
Supplicant MAC 00	)d0.b71b.35de	
AuthSM State	= CONNECTING	
BendSM State	= IDLE	
PortStatus	= UNAUTHORIZED	
MaxReq	= 2	
HostMode	= Single	
Port Control	= Auto	

QuietPeriod Re-authentication ReAuthPeriod ServerTimeout SuppTimeout TxPeriod Guest-Vlan	<pre>= Disabled = 3600 Seconds = 30 Seconds = 30 Seconds = 30 Seconds = 0</pre>
Dot1x Info for int	cerface GigabitEthernet0/2
PortStatus MaxReq HostMode Port Control QuietPeriod Re-authentication ReAuthPeriod ServerTimeout SuppTimeout TxPeriod Guest-Vlan	<pre>= 2 = Multi = Auto = 60 Seconds = Disabled = 3600 Seconds = 30 Seconds</pre>

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

Switch# show dot1	ĸ i	interface gigabitethernet0/1
Supplicant MAC 000	10 E	.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 2-10 describes the fields in the display.

Switch# show dot1x statistics interface gigabitethernet0/1

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 2-10show 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.

\_\_\_\_

Field	Description		
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 IEEE 802.1x Version 1 format.		
LastRxSrcMac	Source MAC address carried in the most recently received EAPOL frame.		

#### Table 2-10 show dot1x statistics Field Descriptions (continued)

## **Related Commands**

Command	Description
dot1x default	Resets the configurable IEEE 802.1x parameters to their default values.

## show env

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

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

Syntax Description	all	Display both fan and temperature environmental status.			
	fan	Display the switch fan status.			
	power	Display the switch power status.			
	rps	Display whether a Cisco RPS 300 Redundant Power System is connected to the switch. This keyword is not visible on all platforms; the Cisco ME switch does not support the RPS			
	temperature	Display the switch temperature status as OK or FAULTY.			
	status	(Optional) Show more detailed temperature status, including the temperature value, state (green, yellow, or red), and the yellow and red threshold values.			
		<b>Note</b> Temperature status is supported only on the Cisco ME-3400-12CS and ME-3400-2CS switches.			
	begin	(Optional) Display begins with the line that matches the expression.			
	exclude	(Optional) Display excludes lines that match the expression.			
	include	(Optional) Display includes lines that match the specified expression.			
	expression	Expression in the output to use as a reference point.			
Command Modes	User EXEC				
Command History	Release	Modification			
	12.2(25)EX	This command was introduced.			
	12.2(25)SEG1	The <b>status</b> keyword was added.			
		The outputs were expanded to reflect the dual fans, dual power supplies, and			

The outputs were expanded to reflect the dual fans, dual power supplies, and temperature setting for the Cisco ME 3400G-12CS switches and temperature setting for the Cisco ME 3400-2 CS switch.

# **Usage Guidelines** On a Cisco ME 3400-12CS and ME 3400 2CS switches, you can use the **show env temperature status** 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.

You can use the **system env temperature threshold yellow** global configuration command to configure the yellow temperature threshold. If not configured, the yellow threshold defaults to 10 degrees Celsius below the red threshold.

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**

Displays for the Cisco ME 3400G-12CS or ME 3400 2CS switch are different than those for other Cisco ME 3400 switches. This is an example of output from the **show env all** command for the Cisco ME 3400G-12CS switch:

Switch> **show env all** FAN 1 is OK FAN 2 is OK TEMPERATURE is OK Temperature Value: 31 Degree Celsius Temperature State: GREEN Yellow Threshold : 56 Degree Celsius Red Threshold : 66 Degree Celsius POWER SUPPLY 1 is OK POWER SUPPLY 2 is Alarm disabled

This is an example of output from the **show env all** command for the Cisco ME 3400G-2CS switch:

Switch> **show env all** FAN is OK TEMPERATURE is OK Temperature Value: 37 Degree Celsius Temperature State: GREEN Yellow Threshold : 45 Degree Celsius Red Threshold : 55 Degree Celsius POWER is OK

This is an example of output from the **show env all** command for other Cisco ME switches:

Switch# **show env all** FAN is OK TEMPERATURE is OK POWER is OK RPS is NOT PRESENT

This is an example of output from the **show env fan** command for the Cisco ME 3400G-12CS switch:

Switch> **show env fan** FAN 1 is OK FAN 2 is OK

This is an example of output from the show env fan command for other Cisco ME switches:

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

This is an example of output from the **show env power** command for the Cisco ME 3400G-12CS switch:

Switch> **show env power** POWER SUPPLY 1 is OK POWER SUPPLY 2 is Alarm disabled

These are examples of output from the **show env temperature** command for the Cisco ME 3400G-12CS or ME-3400-2CS switch:

```
Switch> show env temperature
TEMPERATURE is OK
```

```
Switch> show env temperature status
Temperature Value: 31 Degree Celsius
Temperature State: GREEN
```

L

Yellow Threshold : 56 Degree Celsius Red Threshold : 66 Degree Celsius

#### Related Commands

ands	Command	Description
	power-supply dual	Sets or suppresses alarms for the switch second power supply.
	system env temperature threshold yellow	Configures the yellow temperature threshold.

# 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	l begin (O	ptional) Display begins with the line that matches the <i>expression</i> .			
	exclude (O	(Optional) Display excludes lines that match the <i>expression</i> .			
	include (O	ptional) Display includes lines that match the specified <i>expression</i> .			
	<i>expression</i> Ex	pression in the output to use as a reference point.			
Command Modes	User EXEC				
Command History	Release	Modification			
	12.2(25)EX	This command was introduced.			
	12.2(37)SE	The Mode column was added to the output display.			
Usage Guidelines	The Mode column	shows the shutdown mode that was configured for the error-disabled reason:			
	• port—The physical port is error disabled if a violation occurs.				
	• vlan—The virtual port is disabled if a violation occurs.				
	<ul> <li>port/vlan—Some ports are configured for physical port disable, and others are configured for virtual port disable. Enter the <b>show running config</b> privileged EXEC command to see the configuration for each port.</li> </ul>				
	A displayed gbic-invalid error in the Reason column refers to an invalid small form-factor pluggable (SFP) interface.				
	Expressions are case sensitive. For example, if you enter   exclude output, the lines that contain <i>output</i> are not displayed, but the lines that contain <i>Output</i> are displayed.				
Examples	This is an example	e of output from the show errdisable detect command:			
	Switch> <b>show err</b> ErrDisable Reaso	on Detection Mode			
	arp-inspection bpduguard channel-misconfi community-limit	Enabled port Enabled port			
	dhcp-rate-limit dtp-flap gbic-invalid	Enabled port Enabled port Enabled port Enabled port			
	invalid-policy l2ptguard link-flap	Enabled port Enabled port Enabled port Enabled port			
	link-monitor-fai				

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

<u>Note</u>

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

## **Related Commands**

Command	Description	
errdisable detect cause	Enables error-disable detection for a specific cause or all causes.	
show errdisable flap-values	s Displays error condition recognition information.	
show errdisable recovery	Displays error-disable recovery timer information.	
show interfaces status	Displays interface status or a list of interfaces in an 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	begin (	Optional) Displ	play begins with the line that matches the <i>expression</i> .		
	exclude (	(Optional) Display excludes lines that match the <i>expression</i> .			
	include (				
	<i>expression</i> E	xpression in th	the output to use as a reference point.		
Command Modes	User EXEC				
Command History	Release	Modi	lification		
	12.2(25)EX	This o	s command was introduced.		
Usage Guidelines	The <i>Flaps</i> 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 Reas	· · · · ·	Time (sec)		
	 pagp-flap dtp-flap link-flap	3 3 5	30 30 10		
Note	Expressions are	case sensitive. I	display, the switch does not support DTP. For example, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i> is that contain <i>Output</i> are displayed.		
Examples	This is an examp Switch> <b>show en</b> ErrDisable Reas	<b>rrdisable flap</b> son Flaps	Time (sec)		
	pagp-flap dtp-flap link-flap	3 3 5	30 30 10		

Related Commands	Command	Description
	errdisable detect cause	Enables error-disable detection for a specific cause or all causes.
	show errdisable detect	Displays error-disable detection status.
	show errdisable recovery	Displays error-disable recovery timer information.
	show interfaces status	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	begin ()	Optional) Display begins with the line that matches the <i>expression</i> .
Syntax Description		
	-	Optional) Display excludes lines that match the <i>expression</i> .
		Optional) Display includes lines that match the specified <i>expression</i> .
	<i>expression</i> E	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	-	case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> d, but the lines that contain <i>Output</i> are displayed.
	A <i>gbic-invalid</i> en interface.	rror-disable reason refers to an invalid small form-factor pluggable (SFP) module
Examples	This is an examp	ple of output from the <b>show errdisable recovery</b> command:
	ErrDisable Reas	
	udld	Disabled
	bpduguard	Disabled
	security-violat	tio Disabled
	channel-misconf	-
	vmps	Disabled
	pagp-flap	Disabled
	dtp-flap	Disabled
	12ptguard	Disabled
	link-flap	Enabled
	psecure-violati gbic-invalid	ion Disabled Disabled
	dhcp-rate-limit	
	unicast-flood	Disabled
	storm-control	Disabled
	arp-inspection	
	loopback	Disabled
	Timer interval:	:300 seconds
	Interfaces that	t will be enabled at the next timeout:

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



Though visible in the output, the unicast-flood and DTP fields are not valid.

## **Related Commands**

Command	Description
errdisable recovery	Configures the recover mechanism variables.
show errdisable detect	Displays error-disabled detection status.
show errdisable flap-values	Displays error condition recognition information.
show interfaces status	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	channel-group-number	(Optional) Number of the channel group. The range is 1 to 48.
	detail	Display detailed EtherChannel information.
	load-balance	Display the load-balance or frame-distribution scheme among ports in the port channel.
	port	Display EtherChannel port information.
	port-channel	Display port-channel information.
	protocol	Display the protocol that is being used in the EtherChannel.
	summary	Display a one-line summary per channel-group.
	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
		(Optional) Display includes lines that match the specified <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
Command Modes	l <b>include</b> expression User EXEC	Expression in the output to use as a reference point.
Command Modes Command History	expression	
	<i>expression</i> User EXEC	Expression in the output to use as a reference point.
	expression User EXEC Release 12.2(25)EX	Expression in the output to use as a reference point.  Modification
Command History	expression         User EXEC         Release         12.2(25)EX         If you do not specify a ch         In the output, the Passive	Expression in the output to use as a reference point.         Modification         This command was introduced.         annel-group, all channel groups are displayed.         port list field is displayed only for Layer 3 port channels. This field means that s still not up, is configured to be in the channel group (and indirectly is in the
Command History	expression         User EXEC         Release         12.2(25)EX         If you do not specify a <i>ch</i> In the output, the Passive p         the physical port, which i	Expression in the output to use as a reference point.         Modification         This command was introduced.         annel-group, all channel groups are displayed.         port list field is displayed only for Layer 3 port channels. This field means that s still not up, is configured to be in the channel group (and indirectly is in the

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
             Ports in the group:
              _____
Port: Gi0/1
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Port state
          = Up Mstr In-Bndl
Channel group = 1Mode = ActiveGcchange = -Port-channel = Po1GC = -Pseudo port-channel = Po1
                       Load = 0 \times 00
Port index
          = 0
                                         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:
                         LACP port
                                    Admin
                                               Oper
                                                      Port
                                                              Port
                                    Кеу
                                                      Number State
Port
        Flags State
                        Priority
                                              Key
Gi0/1 SA
              bndl
                        32768
                                                             0x3D
                                    0x0
                                              0x1
                                                      0 \ge 0
Age of the port in the current state: 01d:20h:06m:04s
              Port-channels in the group:
Port-channel: Po1 (Primary Aggregator)
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Age of the Port-channel = 01d:20h:20m:26s
Logical slot/port = 10/1 Number of ports = 2
HotStandBy port = null
Port state = Port-channel Ag-Inuse
Protocol
                 =
                    LACP
Ports in the Port-channel:
Index Load Port
                    EC state
                                  No of bits
----+
                                      _____
0 00 Gi0/1 Active 0
 0
     00 Gi0/2 Active
                                   0
Time since last port bundled: 01d:20h:20m:20s Gi0/2
This is an example of output from the show etherchannel 1 summary command:
```

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

Group Port-channel Protocol Ports LACP Gi0/1(P) Gi0/2(P) 1 Pol(SU) This is an example of output from the show etherchannel 1 port-channel command: Switch> show etherchannel 1 port-channel Port-channels in the group: \_\_\_\_\_ Port-channel: Po1 (Primary Aggregator) \_\_\_\_\_ Age of the Port-channel = 01d:20h:24m:50s Logical slot/port = 10/1 Number of ports = 2 HotStandBy port = null Port state = Port-channel Ag-Inuse Protocol = LACP Ports in the Port-channel: Index Load Port EC state No of bits 0 00 Gi0/1 Active 0 0 00 Gi0/2 Active 0 0 Time since last port bundled: 01d:20h:24m:44s Gi0/2 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

nands	Command	Description
	channel-group	Assigns an Ethernet port to an EtherChannel group.
	channel-protocol	Restricts the protocol used on a port to manage channeling.
	interface port-channel	Accesses or creates the port channel.

## show ethernet service evc

Use the **show ethernet service evc** privileged EXEC command to display information about Ethernet virtual connection (EVC) customer-service instances.

show ethernet service evc [id evc-id | interface interface-id] [detail] [ | {begin | exclude | include}
expression]

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	id evc-id	(Optional) Display EVC information for the specified service. The EVC identifier can be a string of from 1 to 100 characters.		
	interface interface-id	(Optional) Display EVC information for the specified interface.		
	detail	(Optional) Display detailed information about EVC service or the specified EVC ID or interface.		
	begin	in (Optional) Display begins with the line that matches the <i>expression</i> .		
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .		
	include	(Optional) Display includes lines that match the specified expression.		
	expression	Expression in the output to use as a reference point.		
Command Modes	Privileged EXEC			
Command History	Release	Modification		
Command History	Release 12.2(25)SEG	Modification This command was introduced.		
	12.2(25)SEG Expressions are case set			
Command History Usage Guidelines	12.2(25)SEG Expressions are case set	This command was introduced.		
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th	This command was introduced.		
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th	This command was introduced. Insitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> he lines that contain <i>Output</i> are displayed.		
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# <b>show ethernet</b> Identifier	This command was introduced. Insitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> he lines that contain <i>Output</i> are displayed. Putput from the <b>show ethernet service evc</b> command: <b>t service evc</b> Type Act-UNI-cnt Status		
Jsage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE	This command was introduced. Insitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> he lines that contain <i>Output</i> are displayed. Putput from the <b>show ethernet service evc</b> command: <b>t service evc</b> Type Act-UNI-cnt Status P-P 2 Active		
Jsage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK	This command was introduced. Insitive. For example, if you enter   exclude output, the lines that contain output the lines that contain Output are displayed. In the show ethernet service evc command: t service evc Type Act-UNI-cnt Status P-P 2 Active MP-MP 2 PartiallyActive		
Jsage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive the show ethernet service evc command:         t service evc         Type       Act-UNI-cnt         Status         P-P       2         Active         MP-MP       2         P-P       2         Active         P-P       2         Active         P-P       2         Active         P-P       2		
Jsage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE BROWN	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive the show ethernet service evc command:         t service evc         Type Act-UNI-cnt Status         P-P       2         MP-MP       2         P-P       2         Active         MP-MP       2         P-P       2         Active         MP-MP       2         Active         MP-MP       2         Active         MP-MP       2         Active         MP-MP       2         Active		
Jsage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE BROWN GREEN	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive from the show ethernet service evc command:         t service evc         Type Act-UNI-cnt Status         P-P       2         Active         MP-MP       2         P-P       2         Active         MP-MP       2         P-P       3         Active		
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE BROWN GREEN YELLOW	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive from the show ethernet service evc command:         t service evc         Type Act-UNI-cnt Status         P-P       2         Active         MP-MP       2         P-P       2         Active         MP-MP       2         P-P       3         Active         MP-MP       2         PartiallyActive		
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE BROWN GREEN YELLOW BANANAS	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive from the show ethernet service evc command:         t service evc         Type Act-UNI-cnt Status         P-P       2         Active         MP-MP       2         P-P       2         Active         MP-MP       2         P-P       3         Active         MP-MP       2         P-P       0         InActive		
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE BROWN GREEN YELLOW BANANAS TEST2	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive from the show ethernet service evc command:         t service evc         Type Act-UNI-cnt Status         P-P       2         Active         MP-MP       2         P-P       2         Active         MP-MP       2         P-P       3         Active         MP-MP       2         P-P       0         InActive         P-P       0         NotDefined		
	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of or Switch# show ethernet Identifier BLUE PINK PURPLE BROWN GREEN YELLOW BANANAS	This command was introduced.         Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         Insitive from the show ethernet service evc command:         t service evc         Type Act-UNI-cnt Status         P-P       2         Active         MP-MP       2         P-P       2         Active         MP-MP       2         P-P       3         Active         MP-MP       2         P-P       0         InActive		

<b>Related Commands</b>	Command	Description
	ethernet evc evc-id	Defines an EVC and enters EVC configuration mode.

## show ethernet service instance

Use the **show ethernet service instance** privileged EXEC command to display information about Ethernet customer-service instances.

show ethernet service instance [id id] [interface interface-id] [detail] [ | {begin | exclude | include} expression]

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	id id	(Optional) Display information for the specified service-instance identifier, a per-interface service identifier that does not map to a VLAN. The range is 1 to 4294967295.
	interface interface-id	(Optional) Display service-instance information for the specified interface.
	detail	(Optional) Display detailed information about service instances or the specified service-instance ID or interface.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
Command History	Release 12.2(25)SEG	Modification This command was introduced.
Command History Usage Guidelines	12.2(25)SEG Expressions are case set	This command was introduced.
	12.2(25)SEG Expressions are case set are not displayed, but th	This command was introduced. nsitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i>
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th	This command was introduced. nsitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> he lines that contain <i>Output</i> are displayed. utput from the <b>show ethernet service instance</b> command:
Usage Guidelines	12.2(25)SEG Expressions are case set are not displayed, but th This is an example of o Switch# <b>show ethernet</b> Identifier Interface	This command was introduced. nsitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> he lines that contain <i>Output</i> are displayed. utput from the <b>show ethernet service instance</b> command:
Jsage Guidelines	12.2(25)SEG         Expressions are case set are not displayed, but the the set of the	This command was introduced. nsitive. For example, if you enter   exclude output, the lines that contain output ne lines that contain Output are displayed. utput from the show ethernet service instance command: service instance CE-Vlans net0/1 untagged, 1-4094
Jsage Guidelines	12.2(25)SEG         Expressions are case set are not displayed, but the the set of the	This command was introduced. Insitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> he lines that contain <i>Output</i> are displayed. In the show ethernet service instance command: E service instance CE-Vlans hetO/1 untagged, 1-4094 hetO/2
Jsage Guidelines	12.2(25)SEGExpressions are case set are not displayed, but theThis is an example of oSwitch# show ethernet Identifier Interface222FastEtherr 1010FastEtherr 22222FastEtherr	This command was introduced.  Insitive. For example, if you enter   exclude output, the lines that contain output the lines that contain Output are displayed.  Instance cE-Vlans  DetO/1 untagged, 1-4094 DetO/2 200
Usage Guidelines	12.2(25)SEGExpressions are case set are not displayed, but theThis is an example of oSwitch# show ethernet Identifier Interface222FastEtherr 1010FastEtherr 22222FastEtherr 33333FastEtherr	This command was introduced.  Insitive. For example, if you enter   exclude output, the lines that contain output the lines that contain Output are displayed.  Intuput from the show ethernet service instance command:  E service instance  CE-Vlans  DetO/1 untagged, 1-4094 DetO/2 200 DetO/2 default
Usage Guidelines	12.2(25)SEGExpressions are case set are not displayed, but theThis is an example of oSwitch# show ethernet Identifier Interface222FastEtherr 1010FastEtherr 222333FastEtherr 1010FastEtherr 1010FastEtherr10FastEtherr10FastEtherr	This command was introduced.  Insitive. For example, if you enter   exclude output, the lines that contain output the lines that contain Output are displayed.  Intuput from the show ethernet service instance command:  E service instance  CE-Vlans  DetO/1 untagged, 1-4094 DetO/2 200 DetO/2 default DetO/3 300
Usage Guidelines	12.2(25)SEGExpressions are case set are not displayed, but theThis is an example of oSwitch# show ethernet Identifier Interface222FastEtherr 1010FastEtherr 333FastEtherr 1010FastEtherr 1111	This command was introduced.  Insitive. For example, if you enter   exclude output, the lines that contain output the lines that contain Output are displayed.  Intuput from the show ethernet service instance command:  E service instance  CE-Vlans  DetO/1 untagged, 1-4094 DetO/2 default DetO/2 default DetO/3 300 DetO/3
Usage Guidelines	12.2(25)SEGExpressions are case setare not displayed, but theThis is an example of oSwitch# show ethernetIdentifier Interface222FastEthern10FastEthern222FastEthern10FastEthern333FastEthern10FastEthern11FastEthern10FastEthern10FastEthern10FastEthern10FastEthern10FastEthern10FastEthern10FastEthern10FastEthern	This command was introduced.  Insitive. For example, if you enter   exclude output, the lines that contain output the lines that contain Output are displayed.  Intervice instance CE-Vlans DetO/1 untagged, 1-4094 DetO/2 default DetO/2 default DetO/3 300 DetO/3 300 DetO/4 300
Usage Guidelines	12.2(25)SEGExpressions are case setare not displayed, but theThis is an example of oSwitch# show ethernetIdentifier Interface222FastEtherr10FastEtherr222FastEtherr10FastEtherr333FastEtherr10FastEtherr11FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr	This command was introduced.  Insitive. For example, if you enter   exclude output, the lines that contain output, he lines that contain output are displayed.  Intervice instance  CE-Vlans  DetO/1 untagged,1-4094 DetO/2 default DetO/3 300 DetO/3 100 DetO/4 300 DetO/6 untagged,1-4094 DetO/6 untagged,1-4094
Usage Guidelines	12.2(25)SEGExpressions are case setare not displayed, but theThis is an example of oSwitch# show ethernetIdentifier Interface222FastEtherr10FastEtherr22FastEtherr33FastEtherr10FastEtherr11FastEtherr10FastEtherr11FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr	This command was introduced.         nsitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         utput from the show ethernet service instance command:         c service instance         CE-Vlans         het0/1       untagged, 1-4094         het0/2         het0/2         het0/3         300         het0/4         300         het0/4         300         het0/6         untagged, 1-4094
Usage Guidelines	12.2(25)SEGExpressions are case setare not displayed, but theThis is an example of oSwitch# show ethernetIdentifier Interface222FastEtherr10FastEtherr222FastEtherr333FastEtherr10FastEtherr11FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr	This command was introduced.         nsitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed.         utput from the show ethernet service instance command:         c service instance         CE-Vlans         het0/1       untagged, 1-4094         het0/2         het0/2         het0/2         het0/3         het0/4         300         het0/4         300         het0/6         untagged, 1-4094         het0/7         untagged, 1-4094         het0/7         untagged, 1-4094
Usage Guidelines	12.2(25)SEGExpressions are case setare not displayed, but theThis is an example of oSwitch# show ethernetIdentifier Interface222FastEtherr10FastEtherr22FastEtherr33FastEtherr10FastEtherr11FastEtherr10FastEtherr11FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr10FastEtherr	This command was introduced. Insitive. For example, if you enter   exclude output, the lines that contain output he lines that contain Output are displayed. Intervice instance CE-Vlans het0/1 untagged, 1-4094 het0/2 default het0/2 default het0/3 300 het0/4 300 het0/4 300 het0/6 untagged, 1-4094 het0/7 untagged, 1-4094 het0/8 untagged, 1-4094 het0/9 untagged

\_

333	FastEthernet0/11	100-200,1000,1999-4094
222	FastEthernet0/12	20
333	FastEthernet0/12	10
10	FastEthernet0/13	10
20	FastEthernet0/13	20
30	FastEthernet0/13	30
200	FastEthernet0/13	222
200	FastEthernet0/14	200,222
300	FastEthernet0/14	333
555	FastEthernet0/14	555

Related	Commands	Com
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Command	Description
service instance <i>id</i> ethernet	Defines an Ethernet service instance and enters Ethernet service configuration mode.

## show ethernet service interface

Use the **show ethernet service interface** privileged EXEC command to display interface-based information about Ethernet customer-service instances for all interfaces or a specified interface.

show ethernet service interface [interface-id] [detail] [ | {begin | exclude | include} expression]

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	interface-id	(Optional) Display service-instance information for the specified interface.	
	detail	(Optional) Display detailed information about service instances on all interfaces or the specified interface.	
	begin	(Optional) Display begins with the line that matches the expression.	
	exclude	(Optional) Display excludes lines that match the expression.	
	include	(Optional) Display includes lines that match the specified expression.	
	expression	Expression in the output to use as a reference point.	
Command Modes	Privileged EXEC		
Command History	Release	Modification	
	12.2(25)SEG	This command was introduced.	
Examples	These are examples	s of outputs from the <b>show ethernet service interface</b> commands:	
	_	ernet service interface gigabitethernet0/1	
	Interface GigabitEthernet0/	Identifier	
	Switch# <b>show ethe</b> Interface: FastEt ID:	ernet service interface detail Chernet0/1	
	CE-VLANS:		
	EVC Map Type: Bundling-Multiplexing Interface: FastEthernet0/2		
	ID:		
	CE-VLANS: EVC Map Type: Bun	udling-Multiplexing	
	Interface: FastEt		
	ID: CE-VLANS:		
		dling-Multiplexing	
	<output td="" truncated<=""><td>l&gt;</td></output>	l>	

```
Interface: GigabitEthernet0/1
ID: PE2-G101
CE-VLANS: 10,20,30
EVC Map Type: Bundling-Multiplexing
Associated EVCs:
EVC-ID CE-VLAN
WHITE 30
RED 20
BLUE 10
Associated Service Instances:
Service-Instance-ID CE-VLAN
10 10
20 20
30 30
```

<b>Related Commands</b>	Command	Description
	service instance <i>id</i> ethernet	Defines an Ethernet service instance and enters Ethernet service
		configuration mode from interface configuration mode.

# 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	interface interface-id	(Optional) Display the flow control status and statistics for a specific interface.	
	module number	(Optional) Display the flow control status and statistics for all interfaces on the switch. The only valid module number is 1. This option is not available if you have entered a specific interface ID.	
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .	
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .	
	include	(Optional) Display includes lines that match the specified expression.	
	expression	Expression in the output to use as a reference point.	
Command Modes	User EXEC		
Command History	Release	Modification	
	12.2(25)EX	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 <b>show flowcontrol</b> command to display information about all the switch interfaces. The output		
	from the <b>show flowcontrol</b> command is the same as the output from the <b>show flowcontrol module</b> <i>number</i> command.		
	Use the <b>show flowcontrol interface</b> <i>interface-id</i> command to display information about a specific interface.		
	-	nsitive. For example, if you enter <b>  exclude output</b> , the lines that contain <i>output</i> ines that contain <i>Output</i> appear.	
Examples	This is an example of output from the <b>show flowcontrol</b> command.		
	admin	<b>trol</b> Control Receive FlowControl RxPause TxPause oper admin oper	
	Gi0/1 Unsupp. Gi0/2 desired Gi0/3 desired <output truncated=""></output>		

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

Switch> show flowcontrol interface gigabitethernet0/2								
Port	Send Flo	wControl	Receive	FlowControl	RxPause	TxPause		
	admin	oper	admin	oper				
Gi0/2	desired	off	off	off	0	0		

#### **Related Commands**

Command	Description
flowcontrol	Sets the receive flow-control state for an interface.

# show idprom

Use the **show idprom** user EXEC command to display the IDPROM information for a Gigabit Ethernet interface.

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

Syntax Description	<b>interface</b> <i>interface-id</i> Display the IDPROM information for the specified Gigabit Et interface.					
	detail	(Optional) Display detailed IDPROM information.				
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .				
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .				
	include	(Optional) Display includes lines that match the specified <i>expression</i> .				
	expression	Expression in the output to use as a reference point.				
Command Modes	User EXEC					
Command History	Release	Modification				
	12.2(25)EX	This command was introduced.				
		nes that contain <i>Output</i> appear.				
Examples	This is an example of output from the <b>show idprom interface</b> command for a Gigabit Ethernet interface:					
	Switch# show idprom interface gigabitethernet0/1					
	General SFP Information					
	Vendor Serial Number	<pre>: 0x03 : 0x07 : 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x</pre>				
	Other Information					
	Port asic num Port asic port num XCVR init completed	: 0 : 0				

Embedded PHY SFP presence index SFP iter cnt		- <u>-</u>
SFP failed oper flag	:	0x0
IIC error cnt	:	0
IIC error dsb cnt	:	0
IIC max sts cnt	:	4
Chk for link status	:	1
Link Status	:	1
Link Status Media	:	1
Preferred media	:	0
Resolved Media	:	1
Config Media	:	1
Access Count	:	0
Access Count Max	:	2
Port Rx Loss	:	no
Port Tx Fault	:	no
Port Tx Disable	:	no

Sfp selection asic reg map

stbi	:	0x00
sfpControl	:	0x4C
Regs Loc	:	0xF0000000

Page 0 Registers

0000:	1140	Control Register	:	0001	0001	0100	0000
0001:	6149	Control STATUS	:	0110	0001	0100	1001
0002:	0141	Phy ID 1	:	0000	0001	0100	0001
0003:	0C92	Phy ID 2	:	0000	1100	1001	0010
0004:	01E1	Auto-Negotiation Advertisement	:	0000	0001	1110	0001
0005:	0000	Auto-Negotiation Link Partner	:	0000	0000	0000	0000
0006:	0004	Auto-Negotiation Expansion Reg	:	0000	0000	0000	0100
0007:	2001	Next Page Transmit Register	:	0010	0000	0000	0001
0008:	0000	Link Partner Next page Registe	:	0000	0000	0000	0000
0009:	0F00	1000BASE-T Control Register	:	0000	1111	0000	0000
000A:	0000	1000BASE-T Status Register	:	0000	0000	0000	0000
000F:	0000	Extended Status Register	:	0000	0000	0000	0000
0010:	6028	PHY Specific Control Register	:	0110	0000	0010	1000
0011:	6CC8	PHY Specific Status Register	:	0110	1100	1100	1000
0012:	0000	Interrupt Enable Register	:	0000	0000	0000	0000
0013:	0700	PHY Specific Status Register2	:	0000	0111	0000	0000
0015:	01C0	Receive Error Counter	:	0000	0001	1100	0000
0016:	0000	Page Address Register	:	0000	0000	0000	0000
001A:	8040	PHY Specific Control Register2	:	1000	0000	0100	0000

\_\_\_\_\_

<output truncated>

<b>Related Commands</b>	Command	Description
	show controllers	Displays per-interface send and receive statistics read from the
	ethernet-controller	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 | rep | stats |
status [err-disabled] | switchport [backup | module number] | trunk] [ | {begin | exclude |
include} expression]

yntax Description	interface-id	(Optional) Valid interfaces include physical ports (including type, module, and port number) and port channels. The port-channel range is 1 to 48.
	vlan vlan-id	(Optional) VLAN identification. The range is 1 to 4094.
	accounting	(Optional) Display accounting information on the interface, including active protocols and input and output packets and octets.
	capabilities	(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.
	module number	(Optional) Display <b>capabilities</b> , <b>switchport</b> configuration, or <b>transceiver</b> characteristics (depending on preceding keyword) of all interfaces on the switch. The only valid module number is 1. This option is not available if you have entered a specific interface ID.
	counters	(Optional) See the show interfaces counters command.
	description	(Optional) Display the administrative status and description set for an interface.
	etherchannel	(Optional) Display interface EtherChannel information.
	flowcontrol	(Optional) Display interface flowcontrol information
	private-vlan mapping	(Optional) Display private-VLAN mapping information for the VLAN switch virtual interfaces (SVIs) and private VLAN promiscuous ports. A promiscuous port must be a network node interface (NNI). This keyword is visible only when the switch is running the metro access or metro IP access image.
	rep	(Optional) See the show interfaces rep command.
	stats	(Optional) Display the input and output packets by switching path for the interface.
	status	(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.
	err-disabled	(Optional) Display interfaces in error-disabled state.
	switchport	(Optional) Display the administrative and operational status of a switching (nonrouting) port, including port blocking and port protection settings.
	backup	(Optional) Display Flex Link backup interface configuration and status for the specified interface or all interfaces on the switch. This keyword is visible only when the switch is running the metro access or metro IP access image.
	trunk	Display interface trunk information. If you do not specify an interface, only information for active trunking ports appears.
	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .

	include	(Optional) Display includes lines that match the specified <i>expression</i> .					
	expression	Expression in the output to use as a reference point.					
Note	•	in the command-line help strings, the <b>crb</b> , <b>fair-queue</b> , <b>irb</b> , <b>mac-accounting</b> , <b>uning random-detect</b> , <b>rate-limit</b> , and <b>shape</b> keywords are not supported.					
Command Modes	Privileged EXE	C					
Command History	Release	Modification					
	12.2(25)EX	This command was introduced.					
Usage Guidelines	The show interf	faces capabilities command with different keywords has these results:					
	• Use the <b>show interface capabilities module 1</b> to display the capabilities of all interfaces on the switch. Entering any other number is invalid.						
	• Use the <b>show interfaces</b> <i>interface-id</i> <b>capabilities</b> to display the capabilities of the specified interface.						
	• Use the <b>show interfaces capabilities</b> (with no module number or interface ID) to display the capabilities of all interfaces on the switch.						
	• Use the <b>show interface switchport module 1</b> to display the switch port characteristics of all interfaces on the switch. Entering any other number is invalid.						
	-	case sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> , d, but the lines that contain <i>Output</i> are displayed.					
Examples	This is an examp	ple of output from the <b>show interfaces</b> command for an interface:					
-	-	nterfaces gigabitethernet0/2					
	GigabitEtherne	t0/2 is down, line protocol is down					
	MTU 1500 byt reliabili	Gigabit Ethernet, address is 0009.43a7.d085 (bia 0009.43a7.d085) es, BW 10000 Kbit, DLY 1000 usec, ty 255/255, txload 1/255, rxload 1/255					
	Encapsulatio Keepalive se	n ARPA, loopback not set t (10 sec)					
	Auto-duplex,	-					
	-	ontrol is off, output flow-control is off PA, ARP Timeout 04:00:00 Last input never, output never, output hang never					
	Last clearin	g of "show interface" counters never					
		0/75/0/0 (size/max/drops/flushes); Total output drops: 0					
	Queueing str Output queue	a::0/40 (size/max)					
	5 minute inp	ut rate 0 bits/sec, 0 packets/sec					
		put rate 0 bits/sec, 0 packets/sec input, 1040 bytes, 0 no buffer					
	-	0 broadcasts, 0 runts, 0 giants, 0 throttles					
		rrors, 0 CRC, 0 frame, 0 overrun, 0 ignored					
	0 watchdo	g, 0 multicast, 0 pause input					

- 0 watchdog, 0 multicast, 0 pause input
- $\ensuremath{\mathsf{0}}$  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 Pkts In Chars In Pkts Out Chars Out Protocol 1094395 131900022 559555 84077157 ΤP 283896 2520 Spanning Tree 17033760 42 ARP 63738 3825680 231 13860 Interface Vlan2 is disabled Vlan7 Protocol Pkts In Chars In Pkts Out Chars Out No traffic sent or received on this interface. Vlan31 Protocol Pkts In Chars In Pkts Out Chars Out No traffic sent or received on this interface. GigabitEthernet0/1 Protocol Pkts In Chars In Pkts Out Chars Out No traffic sent or received on this interface. GigabitEthernet0/2 Protocol Pkts In Chars In Pkts Out Chars Out No traffic sent or received on this interface.

<output truncated>

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

Switch# show interfaces gigabitethernet0/2 capabilities

	5-5
GigabitEthernet0/2	
Model:	ME-3400-24T-FA
Type:	10/100/1000BaseTX SFP
Speed:	10,100,1000,auto
Duplex:	half,full,auto
Trunk encap. type:	802.1Q
Trunk mode:	on,off,desirable,nonegotiate
Channel:	yes
Broadcast suppression:	percentage(0-100)
Flowcontrol:	<pre>rx-(off,on,desired),tx-(none)</pre>
Fast Start:	yes
QoS scheduling:	<pre>rx-(not configurable on per port basis),tx-(4q2t)</pre>
CoS rewrite:	yes
ToS rewrite:	yes
UDLD:	yes
SPAN: s	ource/destination
PortSecure:	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 gigabitethernet0/2 descriptionInterface StatusProtocol DescriptionGi0/2updownConnects 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= 10/1Number of ports = 0GC= 0x00000000HotStandBy port = null
                = Port-channel Ag-Not-Inuse
Port state
Port-channel2:
Age of the Port-channel = 03d:20h:17m:29s
Logical slot/port = 10/2 Number of ports = 0
            = 0x00000000 HotStandBy port = null
GC
                  = Port-channel Ag-Not-Inuse
Port state
Port-channel3:
Age of the Port-channel = 03d:20h:17m:29s
Logical slot/port= 10/3Number of ports = 0GC= 0x00000000HotStandBy port = null
                 = Port-channel Ag-Not-Inuse
Port state
```

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 mappingInterface Secondary VLAN Typevlan10501vlan10502community
```

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							
Processo	1165354	136205310	570	800	91731594		
Route cach	e 0	0		0	0		
Tota	L 1165354	136205310	570	800	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	Туре
Fa0/1		connected	1	a-full	a-100	10/100BaseTX
Fa0/2		connected	1	a-full	a-100	10/100BaseTX
Fa0/3		notconnect	1	auto	auto	10/100BaseTX
Fa0/4		disabled	1	auto	auto	10/100BaseTX
Fa0/5		disabled	1	auto	auto	10/100BaseTX
Fa0/6		disabled	1	auto	auto	10/100BaseTX
Fa0/7		disabled	1	auto	auto	10/100BaseTX
Fa0/8		disabled	1	auto	auto	10/100BaseTX
Fa0/9		disabled	1	auto	auto	10/100BaseTX
Fa0/10		disabled	1	auto	auto	10/100BaseTX
Fa0/11		disabled	1	auto	auto	10/100BaseTX
Fa0/12		disabled	1	auto	auto	10/100BaseTX
Fa0/13		disabled	1	auto	auto	10/100BaseTX
Fa0/14		disabled	1	auto	auto	10/100BaseTX
Fa0/15		disabled	1	auto	auto	10/100BaseTX
Fa0/16		disabled	1	auto	auto	10/100BaseTX
Fa0/17		disabled	1	auto	auto	10/100BaseTX
Fa0/18		disabled	1	auto	auto	10/100BaseTX
Fa0/19		disabled	1	auto	auto	10/100BaseTX

#### **Cisco ME 3400 Ethernet Access Switch Command Reference**

Fa0/20	disabled	1	auto	auto	10/100BaseTX
Fa0/21	disabled	1	auto	auto	10/100BaseTX
Fa0/22	disabled	1	auto	auto	10/100BaseTX
Fa0/23	disabled	1	auto	auto	10/100BaseTX
Fa0/24	disabled	1	auto	auto	10/100BaseTX
Gi0/1	notconnect	1	auto	auto	10/100/1000Ba
seTX SFP					
Gi0/2	connected	vl-err-dis a	a-full a	-1000	10/100/1000BaseTX

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	fastethernet0/22	status		
Port	Name	Status	Vlan	Duplex	Speed Type
Fa0/22		connected	20,25	a-full	a-100 10/100BaseTX

In this example, port 2 is configured as a private-VLAN promiscuous port. The display shows only the primary VLAN 20.

Switch#	show interfaces	gigabitethernet0/	2 status		
Port	Name	Status	Vlan	Duplex	Speed Type
Gi0/2		connected	20	a-full	a-100 10/100/1000BaseTX

This is an example of output from the **show interfaces status err-disabled** command for an interface:

Switch# show interfaces gigabitethernet0/2 status err-disabled

Port	Name	Status	Reason	Err-disabled Vlans
Gi0/2		connected	elmi evc down	1,200

This is an example of output from the **show interfaces switchport** command for a single port. Table 2-11 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 gigabitethernet0/1 switchport
Name: Gi0/1
Switchport: Enabled
Administrative Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dotlq
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Administrative Native VLAN tagging: enabled
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk Native VLAN tagging: enabled
Administrative private-vlan trunk encapsulation: dotlq
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Capture Mode Disabled
Capture VLANs Allowed: ALL
```

Unknown unicast blocked: disabled Unknown multicast blocked: disabled Appliance trust: none

```
Administrative Native VLAN tagging: enabled
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk Native VLAN tagging: enabled
Administrative private-vlan trunk encapsulation: dotlq
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Capture Mode Disabled
Capture VLANs Allowed: ALL
```

Unknown unicast blocked: disabled Unknown multicast blocked: disabled Appliance trust: none

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.
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.
Administrative Native VLAN tagging	Displays whether or not VLAN tagging 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.
Operational private-vlan	Displays the operational private-VLAN status.
Trunking VLANs enabled	Lists the active VLANs on the trunk.
Capture VLANs allowed	Lists the allowed VLANs on the trunk.
Unknown unicast blocked Unknown multicast blocked	Displays whether or not unknown multicast and unknown unicast traffic is blocked on the interface.

Table 2-11 show interfaces switchport Field Descriptions

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 gigabitethernet0/2 switchport
Name: Gi0/2
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
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 out put from the **show interfaces switchport backup** command when a Flex Link interface goes down (LINK\_DOWN), and VLANs preferred on this interface are moved to the peer interface of the Flex Link pair. In this example, if interface Gi0/6 goes down, Gi0/8 carries all VLANs of the Flex Link pair.

```
Switch#show interfaces switchport backup
Switch Backup Interface Pairs:
Active Interface Backup Interface State
GigabitEthernet2/0/6 GigabitEthernet0/8 Active Down/Backup Up
Vlans Preferred on Active Interface: 1-50
Vlans Preferred on Backup Interface: 60, 100-120
```

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

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

When both interfaces are up, G/0/8 forwards traffic for VLANs 60, 100 to 120, and Gi0/6 will forward traffic for VLANs 1 to 50.

```
Switch#show interfaces switchport backup
Switch Backup Interface Pairs:
Active Interface Backup Interface State
GigabitEthernet0/6 GigabitEthernet2/0/8 Active Up/Backup Up
Vlans on Interface Gi 0/6: 1-50
Vlans on Interface Gi 0/8: 60, 100-120
```

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

Switch#show interfaces switchport backup Switch Backup Interface Pairs: Active Interface Backup Interface State GigabitEthernet0/6 GigabitEthernet0/8 Active Down/Backup Up Vlans on Interface Gi 0/6:

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

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

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

Active Interface Backup Interface State GigabitEthernet20/6 GigabitEthernet0/8 Active Up/Backup Up Vlans on Interface Gi 0/6: 1-50 Vlans on Interface Gi 0/8: 60, 100-120

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

Switch#	show	interfaces	gigabitethernet0/	1 trunk	
Port		Mode	Encapsulation	Status	Native vlan
Gi0/1		auto	negotiate	trunking	1
Port Gi0/1		Vlans allo 1-4094	owed on trunk		
Port Gi0/1		Vlans allo 1-4	owed and active in	management do	main
Port Gi0/1		Vlans in s 1-4	spanning tree forw	arding state a	nd not pruned

<b>Related Commands</b>	Command	Description
	switchport access vlan	Configures a port as a static-access or a dynamic-access port.
	switchport block	Blocks unknown unicast or multicast traffic on an interface.
	switchport backup interface	Configures Flex Links, a pair of Layer 2 interfaces that provide mutual backup.
	switchport mode	Configures the VLAN membership mode of a port.
	switchport mode private-vlan	Configures a port as a private-VLAN host or a promiscuous port.
	switchport private-vlan	Defines private-VLAN association for a host port or private-VLAN mapping for a promiscuous port.

#### 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 | trunk] [module switch- number] |
 etherchannel | protocol status] [ | {begin | exclude | include} expression]

Syntax Description	interface-id	(Optional) ID of the physical interface, including type, module, and port number.		
	errors	(Optional) Display error counters.		
	trunk	(Optional) Display trunk counters.		
	module switch- number	(Optional) Display counters for the specified switch number. The only available value is 1.		
	etherchannel	(Optional) Display EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.		
	protocol status	(Optional) Display status of protocols enabled on interfaces.		
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .		
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .		
	include	(Optional) Display includes lines that match the specified expression.		
	expression	Expression in the output to use as a reference point.		



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

Command Modes Priv

Privileged EXEC

Release	IVIO	dification			
12.2(25)EX	Thi	s command was	introduced.		
f you do not enter	any keywo	ords, all counters	s for all interfac	es are included.	
-		-	•	-	tes that contain <i>output</i>
-	-	output from the	show interface:	s counters comman	d. It displays all
witch# show inte	erfaces co	unters			
ort I	InOctets	InUcastPkts	InMcastPkts	InBcastPkts	
a0/1	0	0	0	0	
a0/2 output truncated	0	0	0	0	
	Expressions are cas re not displayed, l Chis is an example counters for the sw witch# <b>show inte</b>	f you do not enter any keywo Expressions are case sensitive re not displayed, but the line Chis is an example of partial of ounters for the switch. Witch# <b>show interfaces co</b> Fort InOctets a0/1 0	f you do not enter any keywords, all counters Expressions are case sensitive. For example, i re not displayed, but the lines that contain O Chis is an example of partial output from the ounters for the switch. Witch# show interfaces counters Port InOctets InUcastPkts a0/1 0 0 0	f you do not enter any keywords, all counters for all interface Expressions are case sensitive. For example, if you enter   exc re not displayed, but the lines that contain <i>Output</i> are display This is an example of partial output from the show interfaces ounters for the switch. Witch# show interfaces counters Port InOctets InUcastPkts InMcastPkts a0/1 0 0 0 0	f you do not enter any keywords, all counters for all interfaces are included. Expressions are case sensitive. For example, if you enter l <b>exclude output</b> , the liner not displayed, but the lines that contain <i>Output</i> are displayed. This is an example of partial output from the <b>show interfaces counters</b> comman ounters for the switch. Witch# <b>show interfaces counters</b> Port InOctets InUcastPkts InMcastPkts InBcastPkts 'a0/1 0 0 0 0 0

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

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

<output truncated>

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

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

<output truncated>

**Related Commands** 

 Command
 Description

 show interfaces
 Displays additional interface characteristics.

## show interfaces rep

Use the **show interfaces rep** User EXEC command to display Resilient Ethernet Protocol (REP) configuration and status for a specified interface or for all interfaces.

show interfaces [interface-id] rep [detail] [ | {begin | exclude | include} expression]

Syntax Description		
	interface-id	(Optional) Display REP configuration and status for a specified physical interface or port channel ID.
	detail	(Optional) Display detailed REP configuration and status information.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(40)SE	This command was introduced.
	connectivity du	t. In this case, one port goes into a forwarding state for the data path to help maintain ring configuration. The Port Role for this port shows as Fail Logical Open; the port a traffic on all VLANs. The other failed Port Role shows as <i>Fail No Ext Neighbor;</i> this
	port blocks traf	fic for all VLANs.
	port blocks traf When the extern port state transi	fic for all VLANs. hal neighbors for the failed ports are configured, the failed ports go through the alternate tions and eventually go to an Open state or remain as the alternate port, based on the ection mechanism.
	port blocks traff When the extern port state transi alternate port el Expressions are	al neighbors for the failed ports are configured, the failed ports go through the alternate tions and eventually go to an Open state or remain as the alternate port, based on the
Examples	port blocks traf When the extern port state transi alternate port el Expressions are are not displaye	hal neighbors for the failed ports are configured, the failed ports go through the alternate tions and eventually go to an Open state or remain as the alternate port, based on the ection mechanism. case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i>
Examples	port blocks traf When the extern port state transi alternate port el Expressions are are not displaye	hal neighbors for the failed ports are configured, the failed ports go through the alternate tions and eventually go to an Open state or remain as the alternate port, based on the ection mechanism. case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> d, but the lines that contain <i>Output</i> are displayed. output from the <b>show interface rep</b> command: interface rep Seg-id Type LinkOp Role

This is sample output from the **show interface rep** command when external neighbors are not configured:

Switch # show interface rep								
Interface	Seg-id	Туре	LinkOp	Role				
GigabitEthernet0/1	1		NO_NEIGHBOR	FailNoNbr				
GigabitEthernet0/2	2		NO_NEIGHBOR	FailLogOpen				

This is sample output from the **show interface rep detail** command for a specified interface:

Switch # show interface gigabitethernet0/2 rep detail GigabitEthernet0/2 REP enabled Segment-id: 1 (Segment) PortID: 00030019E85BDD00 Preferred flag: No Operational Link Status: INIT\_DOWN Current Key: 0000000000000000000 Port Role: Fail Blocked VLAN: 1-4094 Admin-vlan: 1 Preempt Delay Timer: disabled LSL Ageout Timer: 5000 ms Configured Load-balancing Block Port: 1234567890123456 Configured Load-balancing Block VLAN: 1-4094 STCN Propagate to: none LSL PDU rx: 0, tx: 0 HFL PDU rx: 0, tx: 0 BPA TLV rx: 0, tx: 0 BPA (STCN, LSL) TLV rx: 0, tx: 0 BPA (STCN, HFL) TLV rx: 0, tx: 0 EPA-ELECTION TLV rx: 0, tx: 0 EPA-COMMAND TLV rx: 0, tx: 0 EPA-INFO TLV rx: 0, tx: 0

<b>Related Commands</b>	Command	Description
	rep segment	Enables REP on an interface and assigns a segment ID. This command is also used to configure a port as an edge port, a primary edge port, or a preferred port.
	show rep topology [detail]	Displays information about all ports in the segment, including which one was configured and selected as the primary edge port.

## show interfaces transceivers

Use the **show interfaces transceivers** privileged EXEC command to display the physical properties of a small form-factor pluggable (SFP) module interface.

show interfaces [interface-id] transceiver [detail | dom-supported-list | module number |
properties | threshold-table] [ | {begin | exclude | include} expression]

Syntax Description	interface-id	(Optional) Display configuration and status for a specified physical interface.			
	detail	(Optional) Display calibration properties, including high and low numbers and any alarm information for any Digital Optical Monitoring (DoM)-capable transceiver if one is installed in the switch.			
	dom-supported-list	(Optional) List all supported DoM transceivers.			
	module number	(Optional) Limit display to interfaces on module on the switch. The range is 1 to 9. This option is not available if you entered a specific interface ID.			
	properties	(Optional) Display speed, duplex, and inline power settings on an interface.			
	threshold-table	(Optional) Display alarm and warning threshold table			
	begin	(Optional) Display begins with the line that matches the expression			
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .			
	include	(Optional) Display includes lines that match the specified <i>expression</i> .			
	expression	Expression in the output to use as a reference point.			
Command History	Release	Modification			
-	12.2(25)EY	This command was introduced.			
	12.2(44)SE	The <b>dom-supported-list and threshold-table</b> keywords were added.			
Usage Guidelines	-	ensitive. For example, if you enter I <b>exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> are displayed.			
Examples	This is an example of output from the <b>show interfaces</b> <i>interface-id</i> <b>transceiver properties</b> command:				
	Switch# show interfa	ces gigabitethernet0/1 transceiver properties			
	Name : Gi0/1 Administrative Speed Operational Speed: a Administrative Duple Administrative Power Operational Duplex: Administrative Auto- Operational Auto-MDI	uto x: auto Inline: enable auto MDIX: off			

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

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

-	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (Celsius) (Celsius) (Celsius) (Celsius)
Gi0/3 41.5	110.0 103.0 -8.0 -12.0
~	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (Volts) (Volts) (Volts) (Volts)
Gi0/3 3.20	4.00 3.70 3.00 2.95
	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (mA) (mA) (mA) (mA)
	84.0 70.0 4.0 2.0
Transmit Power Port (dBm)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (dBm) (dBm) (dBm) (dBm)
	-0.0 -0.0 -0.0 -0.0
Receive Power	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (dBm) (dBm) (dBm) (dBm)
	-0.0 -0.0 -0.0 -0.0

This is an example of output from the **show interfaces transceiver dom-supported-list** command:

Switch# show interfaces transceiver dom-supported-list

Transceiver Type	Cisco p/n min version supporting DOM
DWDM GBIC	ALL
DWDM SFP	ALL
RX only WDM GBIC	ALL
DWDM XENPAK	ALL
DWDM X2	ALL
DWDM XFP	ALL
CWDM GBIC	NONE
CWDM X2	ALL
CWDM XFP	ALL
XENPAK ZR	ALL
X2 ZR	ALL
XFP ZR	ALL
Rx_only_WDM_XENPAK	ALL
XENPAK_ER	10-1888-03
X2_ER	ALL
XFP_ER	ALL
XENPAK_LR	10-1838-04

**Cisco ME 3400 Ethernet Access Switch Command Reference** 

X2_LR		ALL
<output< td=""><td>truncated&gt;</td><td></td></output<>	truncated>	

#### This is an example of output from the show interfaces transceiver threshold-table command:

Optical Tx	Optical Rx	Temp	Laser Bias	Voltage current	
DWDM GBIC					
Min1	-0.50	-28.50	0	N/A	4.50
Min2	-0.30	-28.29	5	N/A	4.75
Max2	3.29	-6.69	60	N/A	5.25
Max1	3.50	6.00	70	N/A	5.50
DWDM SFP					
Min1	-0.50	-28.50	0	N/A	3.00
Min2	-0.30	-28.29	5	N/A	3.09
Max2	4.30	-9.50	60	N/A	3.59
Max1	4.50	9.30	70	N/A	3.70
RX only WDM	GBIC				
Min1	N/A	-28.50	0	N/A	4.50
Min2	N/A	-28.29	5	N/A	4.75
Max2	N/A	-6.69	60	N/A	5.25
Max1	N/A	6.00	70	N/A	5.50
DWDM XENPAK					
Min1	-1.50	-24.50	0	N/A	N/A
Min2	-1.29	-24.29	5	N/A	N/A
Max2	3.29	-6.69	60	N/A	N/A
Max1	3.50	4.00	70	N/A	N/A
DWDM X2					
Min1	-1.50	-24.50	0	N/A	N/A
Min2	-1.29	-24.29	5	N/A	N/A
Max2	3.29	-6.69	60	N/A	N/A
Max1	3.50	4.00	70	N/A	N/A
DWDM XFP					
Min1	-1.50	-24.50	0	N/A	N/A
Min2	-1.29	-24.29	5	N/A	N/A
Max2	3.29	-6.69	60	N/A	N/A
Max1	3.50	4.00	70	N/A	N/A
CWDM X2					
Min1	N/A	N/A	0	N/A	N/A
Min2	N/A	N/A	0	N/A	N/A
Max2	N/A	N/A	0	N/A	N/A
Max1	N/A	N/A	0	N/A	N/A

<b>Related Commands</b>	Command	Description		
show interfaces		Displays additional interface characteristics.		

# show inventory

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

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

Syntax Description	entity-name	(Optional) Display the specified entity. For example, enter the interface (such as gigabitethernet $0/x$ ) into which a small form-factor pluggable (SFP) module is installed to display its identity.			
	raw	(Optional) Display every entity in the device.			
	begin	(Optional) Display begins with the line that matches the expression.			
	exclude	(Optional) Display excludes lines that match the expression.			
	include	(Optional) Display includes lines that match the specified expression.			
	expression	Expression in the output to use as a reference point.			
Command Modes	User EXEC				
Command History	Release	Modification			
	12.2(25)EX	This command was introduced.			
	12.2(25)SEG1	Support for the <i>entity-name</i> keyword was added.			
	(slot identity), entity description, and the unique device identifier (UDI), including PID, version identifier (VID), and serial number (SN) of that entity.				
	Many legacy SFPs a	re not programmed with PIDs and VID.s			
<u> </u>	If there is no PID, no output appears when you enter the <b>show inventory</b> command.				
	*	e sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> at the lines that contain <i>Output</i> are displayed.			
Examples	are not displayed, bu				
Examples	This is example outp Switch> <b>show inver</b> NAME: "1", DESCR:	but from the <b>show inventory</b> command:			

#### 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 metro IP access or metro access image.

Syntax Description	interfaces [interface-id]	(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.					
	log	(Optional) Display the configuration and contents of the dynamic ARP inspection log buffer.					
	statistics [vlan vlan-range]	Optional) Display statistics for forwarded, dropped, MAC validation ilure, IP validation failure, access control list (ACL) permitted and enied, and DHCP permitted and denied packets for the specified LAN. If no VLANs are specified or if a range is specified, display formation only for VLANs with dynamic ARP inspection enabled ctive).					
		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.					
	vlan vlan-range	(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.					
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .					
	exclude	(Optional) Display excludes lines that match the expression.					
	include	(Optional) Display includes lines that match the specified <i>expression</i> .					
	expression	Expression in the output to use as a reference point.					

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12.2(37)SE	The output changed to include Probe Logging information.

Gi0/2

Gi0/3

Usage Guidelines	-	ons are case sensitive. isplayed, but the lines	-	•	e <b>xclude output</b> , the lin blayed.	es that contain <i>output</i>
Examples		n example of output fi show ip arp inspect		v ip arp inspect	t <b>ion</b> command	
	Destinat	Mac Validation tion Mac Validation ess Validation	: Disabled			
	Vlan				Static ACL	
	1	Enabled	Active		No	
	Vlan	ACL Logging		ng Probe		
	1			Permi		
		Forwarded				
	1	0	0	0		
	Vlan				Source MAC Failur	
	1		0			0
	Vlan	Dest MAC Failures		tion Failures	Invalid Protocol	
	1	0		0		0
	This is a	n example of output f	rom the <b>show</b>	ip arp inspect	tion interfaces comma	nd:
	Interfa	show ip arp inspect ace Trust Sta	ate Rate	(pps) Bur	st Interval	
		Untrusted		15	1	

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

15

15

Switch# show ip	arp inspection	interfaces gigab	oitethernet0/1
Interface	Trust State	Rate (pps)	Burst Interval
Gi0/1	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.
```

Untrusted

Untrusted

Interface	Vlan	Sender MAC	Sender IP	Num Pkts	Reason	Time
Gi0/1	5	0003.0000.d673	192.2.10.4	5	DHCP Deny	19:39:01 UTC
Mon Mar 1	1993					
Gi0/1	5	0001.0000.d774	128.1.9.25	6	DHCP Deny	19:39:02 UTC
Mon Mar 1	1993					
Gi0/1	5	0001.c940.1111	10.10.10.1	7	DHCP Deny	19:39:03 UTC
Mon Mar 1	1993					

1

Gi0/1	5	0001.c940.1112	10.10.10.2	8	DHCP Deny	19:39:04 UTC
Mon Mar 1	1993					
Gi0/1	5	0001.c940.1114	173.1.1.1	10	DHCP Deny	19:39:06 UTC
Mon Mar 1	1993					
Gi0/1	5	0001.c940.1115	173.1.1.2	11	DHCP Deny	19:39:07 UTC
Mon Mar 1	1993					
Gi0/1	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 \_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ 3 4618 4605 0 0 0 4 5 Ο 2000 ACL Permits Source MAC Failures Vlan DHCP Permits \_ \_ \_ \_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ 5 0 12 0 0 0 2000 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 insp	pection statis	tics vlan 5	
Vlan	Forwarded	Dropped	DHCP Drops	ACL Drops
5	3	4618	4605	4
Vlan	DHCP Permits	ACL Permits	Source MAC Fail	ures
5	0	12		0
Vlan	Dest MAC Failure	es IP Valida	tion 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 Loggi	ng	
5	Acl-Match	All		

#### **Related Commands**

Command	Description
arp access-list	Defines an ARP ACL.
clear ip arp inspection log	Clears the dynamic ARP inspection log buffer.
clear ip arp inspection statistics	Clears the dynamic ARP inspection statistics.
ip arp inspection log-buffer	Configures the dynamic ARP inspection logging buffer.
ip arp inspection vlan logging	Controls the type of packets that are logged per VLAN.
show arp access-list	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 [ | {begin | exclude | include} expression]

			D: 1	1 .	• .1		. 1 .		
Syntax Description	begin	· 1	1 0	e				he expression.	
	exclude					s that match			
	include	(Optional)	Display	includes	s lines	s that match	the speci	fied expression.	
	expression	Expression	in the o	output to	use a	s a referenc	e point.		
Command Modes	User EXEC								
Command History	Release	Modificatio	on						
	12.2(25)EX	This comm	and was	introdu	ced.				
Examples	This is an example o	f output from the	e show i	p dhcp s	snoop	ing comma	nd.		
·	Switch> <b>show ip dh</b> Switch DHCP snoopi DHCP snooping is c 40-42 Insertion of optio	<b>cp snooping</b> ng is enabled onfigured on fo	ollowing		-	8			
	Option 82 on untru	-							
	Verification of hw Interface	Trus		Rate 1	imit	(pps)			
	GigabitEthernet0/1 yes unlimited GigabitEthernet0/2 yes unlimited								
Related Commands	Command		Descrip	tion					
	show ip dhcp snoop	oing binding	Display	s the DF	ICP s	nooping bir	ding info	rmation.	

## 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	ip-address	(Optional) S	pecify the bindi	ng entry IP addre	ss.				
	mac-address	(Optional) S	pecify the bindi	ng entry MAC ad	dress.				
	interface interface-id	d (Optional) S	pecify the bindi	ng input interface	e.				
	vlan vlan-id	(Optional) Specify the binding entry VLAN.							
	begin	Display beg	ns with the line	that matches the	express	sion.			
	exclude	Display excl	Display excludes lines that match the <i>expression</i> .						
	include	Display incl	udes lines that n	natch the specifie	d <i>expre</i>	ssion.			
	expression	Expression i	n the output to u	ise as a reference	point.				
Command Modes	User EXEC								
Command History	Release	Modification							
•	12.2(25)EX	This comma	nd was introduc	ed.					
Usage Guidelines	<b>A A</b>		1			lly configured bindings			
					the dyr	namically and statically			
	configured bindings i	n the DHCP snoc enabled and an ir	ping binding da	tabase.	·	namically and statically			
	configured bindings i If DHCP snooping is statically configured	n the DHCP snoo enabled and an ir bindings. sensitive. For exa	ping binding da terface changes mple, if you ente	tabase. to the down state er   <b>exclude outp</b>	, the sv	namically and statically vitch does not delete the			
Examples	configured bindings i If DHCP snooping is statically configured Expressions are case	n the DHCP snoo enabled and an ir bindings. sensitive. For exa lines that contain	ping binding da terface changes mple, if you ente n <i>Output</i> appear.	tabase. to the down state er   <b>exclude outp</b>	e, the sw ut, the ∃	namically and statically witch does not delete the lines that contain <i>output</i>			
Examples	configured bindings i If DHCP snooping is statically configured Expressions are case do not appear, but the	n the DHCP snoo enabled and an ir bindings. sensitive. For exa lines that contain now to display the	ping binding da terface changes mple, if you ente n <i>Output</i> appear. e DHCP snoopir	tabase. to the down state er   <b>exclude outp</b>	e, the sw ut, the ∃	namically and statically witch does not delete the lines that contain <i>output</i>			

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

Switch> <b>show ip dho</b> MacAddress	<b>p snooping bindi</b> IpAddress	<b>.ng 10.1.2.150</b> Lease(sec)		VLAN	Interface
01:02:03:04:05:06 Total number of bir		9810	dhcp-snooping	20	GigabitEthernet0/1

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

Switch> show ip dho	p snooping bindin	g 0102.0304.	0506		
MacAddress	IpAddress	Lease(sec)	Туре	VLAN	Interface
01:02:03:04:05:06	10.1.2.150	9788	dhcp-snooping	20	GigabitEthernet0/2
Total number of bir	dings: 1				

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

Switch> show ip dho	p snooping bindin	g interface	gigabitethernet	0/2	
MacAddress	IpAddress	Lease(sec)	Туре	VLAN	Interface
00:30:94:C2:EF:35	10.1.2.151	290	dhcp-snooping	20	GigabitEthernet0/2
Total number of bir	dings: 1				

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

Switch> show ip dho	p snooping bindin	ıg vlan 20			
MacAddress	IpAddress	Lease(sec)	Туре	VLAN	Interface
01:02:03:04:05:06	10.1.2.150	9747	dhcp-snooping	20	GigabitEthernet0/1
00:00:00:00:00:02	10.1.2.151	65	dhcp-snooping	20	GigabitEthernet0/2
Total number of bir	ndings: 2				

Table 2-12 describes the fields in the show ip dhcp snooping binding command output:

#### Table 2-12show 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		
Туре	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**

S	Command	Description	
	ip dhcp snooping binding	Configures the DHCP snooping binding database	
	show ip dhcp snooping	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]

Syntax Description	detail	(Optional) Disp	olay do	etailed sta	tus and st	atistics	information.	
	begin	(Optional) Disp	olay be	egins with	the line	that mat	ches the <i>express</i>	sion.
	exclude	(Optional) Disp	olay ez	cludes lin	nes that m	atch the	expression.	
	include	(Optional) Disp	olay in	cludes lin	es that m	atch the	specified expre	ssion.
	expression	Expression in the output to use as a reference point.						
Command Modes	User EXEC							
Command History	Release Modification							
	12.2(25)EX	This	comr	nand was	introduce	d.		
Examples	This is an example of output from the <b>show ip dhcp snooping database</b> command:							and:
	Switch> <b>show ip dhcp snooping database</b> Agent URL : Write delay Timer : 300 seconds Abort Timer : 300 seconds							
	Agent Runnin Delay Timer	lg : No Expiry : Not Ru	nning					
	Abort Timer	Expiry : Not Ru	nning					
	Last Succede	d Time : None						
	Last Failed							
	Last Failed	Reason : No fai	lure	recorded				
	Total Attemp	ts :	0	Startu	> Failure	es :	0	
	Successful 1		0		Transfer	s:	0	
	Successful F		0	Failed		:	0	
	Successful W Media Failur		0 0	Failed	Writes	:	0	
	This is an exa	cample of output from the show ip dhcp snooping database detail command:						
	Agent URL : Write delay	tftp://10.1.1.1 Timer : 300 sec : 300 seconds	/dire					
	-	Expiry : 7 (00:						
	Abort Timer	Expiry : Not Ru	nning					
	Last Succede	d Time : None						

Last Failed Time : 17 Last Failed Reason :				
Total Attempts Successful Transfers Successful Reads Successful Writes Media Failures	:	21 0 0 0 0	Startup Failures : Failed Transfers : Failed Reads : Failed Writes :	0 21 0 21
First successful acce Last ignored bindings Binding Collisions Invalid interfaces Parse failures Last Ignored Time : N	counte : :	ers :	Expired leases Unsupported vlans	0 0
Total ignored binding Binding Collisions Invalid interfaces Parse failures	:	cers: 0 0 0	Expired leases Unsupported vlans	0 0

#### **Related Commands**

Command	Description
ip dhcp snooping Enables DHCP snooping on a VLAN.	
ip dhcp snooping database	Configures the DHCP snooping binding database agent or the binding file.
show ip dhcp snooping	Displays DHCP snooping information.

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# show ip dhcp snooping statistics

Use the **show ip dhcp snooping statistics** user EXEC command to display DHCP snooping statistics in summary or detail form.

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

Syntax Description	detail	(Optional) Display detailed statist	ics information.
	begin	(Optional) Display begins with the	e line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines	that match the <i>expression</i> .
	include	(Optional) Display includes lines	that match the specified <i>expression</i> .
	expression	Expression in the output to use as	a reference point.
Command Modes	User EXEC		
Command History	Release	Modification	
-	12.2(37)SE	This command was intr	roduced.
Usage Guidelines	-	are case sensitive. For example, if yo r, but the lines that contain <i>Output</i> a	u enter   <b>exclude output</b> , the lines that contain <i>output</i>
	In a switch s statistics cou	•	e stack master. If a new stack master is elected, the
Examples	This is an ex	ample of output from the <b>show ip dh</b>	cp snooping statistics command:
	Packets Fo Packets Dre		= 0 = 0 = 0
	This is an ex	ample of output from the <b>show ip dh</b>	acp snooping statistics detail command:
	Packets Pro	w ip dhcp snooping statistics de ocessed by DHCP Snooping opped Because	<b>tail</b> = 0
	IDB not 1 Oueue fu		= 0 = 0
	~ · · · · ·	e is in errdisabled	= 0
	Rate lim	it exceeded	= 0
		on untrusted ports	= 0
	Nonzero g	giaddr ac not equal to chaddr	= 0 = 0
	Binding 1		= 0
	5	n of opt82 fail	= 0
	Interfac	-	= 0
		output interface	= 0
		tput port equal to input port enied by platform	= 0 = 0

Table 2-13 shows the DHCP snooping statistics and their descriptions:

Table 2-13	DHCP Snooping Statistics
------------	--------------------------

DHCP Snooping Statistic	Description
Packets Processed by DHCP Snooping	Total number of packets handled by DHCP snooping, including forwarded and dropped packets.
Packets Dropped Because IDB not known	Number of errors when the input interface of the packet cannot be determined.
Queue full	Number of errors when an internal queue used to process the packets is full. This might happen if DHCP packets are received at an excessively high rate and rate limiting is not enabled on the ingress ports.
Interface is in errdisabled	Number of times a packet was received on a port that has been marked as error disabled. This might happen if packets are in the processing queue when a port is put into the error-disabled state and those packets are subsequently processed.
Rate limit exceeded	Number of times the rate limit configured on the port was exceeded and the interface was put into the error-disabled state.
Received on untrusted ports	Number of times a DHCP server packet (OFFER, ACK, NAK, or LEASEQUERY) was received on an untrusted port and was dropped.
Nonzero giaddr	Number of times the relay agent address field (giaddr) in the DHCP packet received on an untrusted port was not zero, or the <b>no ip dhcp snooping information option</b> <b>allow-untrusted</b> global configuration command is not configured and a packet received on an untrusted port contained option-82 data.
Source mac not equal to chaddr	Number of times the client MAC address field of the DHCP packet (chaddr) does not match the packet source MAC address and the <b>ip dhcp snooping verify</b> <b>mac-address</b> global configuration command is configured.
Binding mismatch	Number of times a RELEASE or DECLINE packet was received on a port that is different than the port in the binding for that MAC address-VLAN pair. This indicates someone might be trying to spoof the real client, or it could mean that the client has moved to another port on the switch and issued a RELEASE or DECLINE. The MAC address is taken from the chaddr field of the DHCP packet, not the source MAC address in the Ethernet header.
Insertion of opt82 fail	Number of times the option-82 insertion into a packet failed. The insertion might fail if the packet with the option-82 data exceeds the size of a single physical packet on the internet.

DHCP Snooping Statistic	Description
Interface Down	Number of times the packet is a reply to the DHCP rela agent, but the SVI interface for the relay agent is down This is an unlikely error that occurs if the SVI goes dow between sending the client request to the DHCP server and receiving the response.
Unknown output interface	Number of times the output interface for a DHCP reply packet cannot be determined by either option-82 data or lookup in the MAC address table. The packet is dropped This can happen if option 82 is not used and the client MAC address has aged out. If IPSG is enabled with the port-security option and option 82 is not enabled, the MAC address of the client is not learned, and the reply packets will be dropped.
Reply output port equal to input port	Number of times the output port for a DHCP reply pack is the same as the input port, causing a possible loop. Indicates a possible network misconfiguration or misus of trust settings on ports.
Packet denied by platform	Number of times the packet has been denied by a platform-specific registry.

#### Table 2-13 DHCP Snooping Statistics

<b>Related Commands</b>	Command	Description
	clear ip dhcp snooping	Clears the DHCP snooping binding database, the DHCP snooping binding database agent statistics, or the DHCP snooping statistics counters.

## show ip igmp profile

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

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

Syntax Description	profile number	(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.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Examples	-	es of output from the <b>show ip igmp profile</b> privileged EXEC command, with and g a profile number. If no profile number is entered, the display includes all profiles switch.
	Switch# <b>show ip</b> IGMP Profile 40 permit range 233.1.	igmp profile 40 1.1 233.255.255.255
	IGMP Profile 4 permit	igmp profile 9.0 230.9.9.0 9.0 229.255.255.255
	range 229.9.	
<b>Related Commands</b>	Command	Description
Related Commands		

## 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] [detail] ] [vlan vlan-id] [detail]
 [ | {begin | exclude | include} expression]

Syntax Description	groups	(Optional) See the show ip igmp snooping groups command.			
	mrouter	(Optional) See the show ip igmp snooping mrouter command.			
	querier	(Optional) See the show ip igmp snooping querier command.			
	vlan vlan-id	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094 (available only in privileged EXEC mode).			
	begin	(Optional) Display begins with the line that matches the expression.			
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .			
	include	(Optional) Display includes lines that match the specified <i>expression</i> .			
	expression	Expression in the output to use as a reference point.			
Command Modes	User EXEC				
Command History	Release	Modification			
,	12.2(25)EX	This command was introduced.			
Usage Guidelines	VLAN IDs 1002 snooping.	nd to display snooping configuration for the switch or for a specific VLAN. to 1005 are reserved for Token Ring and FDDI VLANs and cannot be used in IGMP			
	Although visible in the output display, output lines for source-only learning are not valid.				
	-	case sensitive. For example, if you enter <b>  exclude output</b> , the lines that contain <i>output</i> at the lines that contain <i>Output</i> appear.			
Examples	-	ble of output from the <b>show ip igmp snooping vlan 1</b> command. It shows snooping or a specific VLAN.			
	Global IGMP Sno	<b>p igmp snooping vlan 1</b> poping configuration:			
	IGMP snooping IGMPv3 snooping Report suppress TCN solicit que TCN flood query	ery :Disabled			

```
Vlan 1:

------

IGMP snooping :Enabled

Immediate leave :Disabled

Multicast router learning mode :pim-dvmrp

Source only learning age timer :10

CGMP interoperability mode :IGMP_ONLY

Last member query interval : 100
```

```
<u>Note</u>
```

Source-only learning are not supported, and information appearing for this feature 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
Last member query interval : 100
Vlan 1:
_____
IGMP snooping
                                :Enabled
Immediate leave
                               :Disabled
Multicast router learning mode
                              :pim-dvmrp
Source only learning age timer
                              :10
                              :IGMP_ONLY
CGMP interoperability mode
Last member query interval
                               : 100
Vlan 2:
_____
IGMP snooping
                                :Enabled
Immediate leave
                                :Disabled
Multicast router learning mode
                              :pim-dvmrp
Source only learning age timer
                               :10
CGMP interoperability mode
                               : IGMP_ONLY
Last member query interval
                                : 333
```

<output truncated>

Related Commands	Command	Description
	ip igmp snooping	Enables and configures IGMP snooping on the switch or on a VLAN.
	show ip igmp snooping mrouter	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.
	show ip igmp snooping querier	Displays the configuration and operation information for the IGMP querier configured on a switch.

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#### 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 vlan vlan-id [ip\_address | count | dynamic [count] | user [count]]
 [ | {begin | exclude | include} expression]

Syntax Description	count				
		options instead of the actual entries.			
	dynamic	(Optional) Display entries learned by IGMP snooping.			
	user	Optional) Display only the user-configured multicast entries.			
	ip_address	(Optional) Display characteristics of the multicast group with the specified group IP address.			
	vlan-id	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094.			
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .			
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .			
	include	(Optional) Display includes lines that match the specified <i>expression</i> .			
	expression	Expression in the output to use as a reference point.			
Command Modes	Privileged EXE	C			
Command History	Release	Modification			
	12.2(25)EX	This command was introduced.			
Usage Guidelines	Use this comma	and to display multicast information or the multicast table.			
osuge duluellines					
	VLAN IDs 1002 to 1005 are reserved for Token Ring and FDDI VLANs and cannot be used in IGMP snooping.				
	1	case sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> but the lines that contain <i>Output</i> appear.			

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

#### 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	Туре	Version	Port List
104	224.1.4.2	igmp	v2	Gi0/1, Gi0/2
104	224.1.4.3	igmp	v2	Gi0/1, Gi0/2

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

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

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

Switch#	show ip igmp	snooping groups	vlan 1 dy	namic
Vlan	Group	Туре	Version	Port List
104	224.1.4.2	igmp	v2	Gi0/1, Fa0/15
104	224.1.4.3	igmp	v2	Gi0/1, Fa0/15

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

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

Related Commands	Command	Description
	ip igmp snooping	Enables and configures IGMP snooping on the switch or on a VLAN.
	show ip igmp snooping	Displays the IGMP snooping configuration of the switch or the VLAN.
	show ip igmp snooping mrouter	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.

	-	-	-	-
show	Ip	Iqmp	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	vlan vlan-id	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	VLAN IDs 1002 t snooping.	to display multicast router ports on the switch or for a specific VLAN. o 1005 are reserved for Token Ring and FDDI VLANs and cannot be used in IGMP LAN registration (MVR) is enabled, the <b>show ip igmp snooping mrouter</b> command
		lticast router information and IGMP snooping information.
	_	ase sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> appear.
Examples	-	e of output from the <b>show ip igmp snooping mrouter</b> command. It shows how to router ports on the switch.
	Vlan ports	igmp snooping mrouter
	1 Gi0/1(dy	namic)

Related Commands	Command	Description
	ip igmp snooping	Enables and configures IGMP snooping on the switch or on a VLAN.
	ip igmp snooping vlan mrouter	Adds a multicast router port to a multicast VLAN.
	show ip igmp snooping	Displays the IGMP snooping configuration of the switch or the VLAN.
	show ip igmp snooping groups	Displays IGMP snooping multicast information for the switch or for the specified parameter.

## show ip igmp snooping querier

Use the **show ip igmp snooping querier** user EXEC command to display the IP address and incoming port for the Internet Group Management Protocol (IGMP) query most recently received by the switch.

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

Syntax Description	vlan vlan-id	(Optional) Specify a VLAN; the range is 1 to 1001 and 1006 to 4094.
	detail	(Optional) Display querier information as well as configuration and operational information pertaining to the querier.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	detected device multicast router	<b>b igmp snooping querier</b> command to display the IGMP version and IP address of a (also called a <i>querier</i> ) that sends IGMP query message. A subnet can have multiple is but has only one IGMP querier. In a subnet running IGMPv2, one of the multicast d as the querier. The querier can be a Layer 3 switch.
	querier was dete	<b>np snooping querier</b> command output also shows the VLAN and interface on which the ected. If the querier is the switch, the output shows the <i>Port</i> field as <i>Router</i> . If the querier butput shows the port number on which the querier is learned in the <i>Port</i> field.
	snooping queri	<b>np snooping querier detail</b> user EXEC command is similar to the <b>show ip igmp</b> <b>er</b> command. However, the <b>show ip igmp snooping querier detail</b> command <b>displays</b> <b>of the most recent device detected by the switch querier along with this additional</b>
	• The elected	IGMP querier in the VLAN
		uration and operational information pertaining to the switch querier (if any) that is in the VLAN
		case sensitive. For example, if you enter   exclude output, the lines that contain <i>output</i> out the lines that contain <i>Output</i> appear.

### Examples

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

Switch> show ip igmp snooping querier

Vlan	IP Address	IGMP Version	Port
1	172.20.50.11	 v3	Gi0/1
2	172.20.40.20	v2	Router

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

Switch> show ip igmp snooping querier detail

	IP Address			Port
	1.1.1.1			Fa0/1
Global IG	MP switch queri	er statı	1S	
max-respo querier-t tcn query tcn query	sion address erval (sec) nse-time (sec) imeout (sec)		: 10 : 120 : 2 : 10	
elected g	puerier is 1.1.1		on p	
admin sta admin ver source IP query-int max-respo querier-t tcn query tcn query operation operation	te sion eddress erval (sec) nse-time (sec) imeout (sec) count interval (sec)		: Enable : 2 : 10.1.1 : 60 : 10 : 120 : 2	ed 65

#### **Related Commands**

ls	Command	Description
	ip igmp snooping querier	Enables and configures the IGMP snooping querier on the switch or on a VLAN.
	show ip igmp snooping mrouter	Displays IGMP snooping multicast router ports for the switch or for the specified multicast VLAN.

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# 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] [vlan vlan-id]
[interface interface-id] [ | {begin | exclude | include} expression]

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	ip-address	-	Display IP source b			
	mac-address		Display IP source b	• •		
	dhcp-snooping	(Optional) l	Display IP source b	oindings that were	e learne	ed by DHCP snooping.
	static	(Optional) l	Display static IP sc	ource bindings.		
	vlan vlan-id	(Optional) l	Display IP source b	oindings on a spec	cific Vl	LAN.
	interface interface-id	(Optional) l	Display IP source b	oindings on a spec	cific in	terface.
	begin	(Optional) l	Display begins with	n the line that ma	tches tl	ne expression.
	exclude	(Optional) l	Display excludes li	nes that match th	e <i>expre</i>	ession.
	include	(Optional)	Display includes lin	nes that match the	e specif	fied expression.
	expression	Expression	in the output to use	e as a reference p	oint.	
			ion			
	12.2(25)EX The <b>show ip source bin</b> in the DHCP snooping command to display on	<b>iding</b> comma binding data	mand was introduc and output shows th base. Use the <b>show</b>	e dynamically and y <b>ip dhcp snoopi</b> i		
Command History Usage Guidelines Examples	The <b>show ip source bin</b> in the DHCP snooping command to display on This is an example of c	nding comma binding data ly the dynam putput from th	mand was introduc and output shows th base. Use the <b>show</b> nically configured l	e dynamically and 7 <b>ip dhcp snoopii</b> pindings.	ng bind	
Usage Guidelines	The <b>show ip source bin</b> in the DHCP snooping command to display on This is an example of o Switch> <b>show ip sour</b> MacAddress	nding comma binding data lly the dynam output from th ce binding IpAddress	mand was introduc and output shows th base. Use the <b>show</b> nically configured b ne <b>show ip source</b> Lease(sec)	e dynamically and y <b>ip dhcp snoopii</b> pindings. <b>binding</b> comman	ng bind Id: VLAN	<b>ling</b> privileged EXEC
Jsage Guidelines	The <b>show ip source bin</b> in the DHCP snooping command to display on This is an example of o Switch> <b>show ip sour</b> MacAddress 	nding comma binding data lly the dynam putput from th ce binding	mand was introduc and output shows th base. Use the <b>show</b> nically configured b ne <b>show ip source</b> Lease(sec)	e dynamically and 7 <b>ip dhcp snoopii</b> bindings. <b>binding</b> comman	ng bind nd: VLAN  10	ling privileged EXEC
Usage Guidelines	The <b>show ip source bin</b> in the DHCP snooping command to display on This is an example of o Switch> <b>show ip sour</b> MacAddress 	nding comma binding data ly the dynam output from th ce binding IpAddress 	mand was introduc and output shows th base. Use the <b>show</b> nically configured b ne <b>show ip source</b> Lease(sec) infinite	e dynamically and y <b>ip dhcp snoopin</b> pindings. <b>binding</b> comman Type 	ng bind nd: VLAN  10	Interface GigabitEthernet0/1
Jsage Guidelines Examples	The <b>show ip source bin</b> in the DHCP snooping command to display on This is an example of or Switch> <b>show ip sour</b> MacAddress 	nding comma binding data ly the dynam output from th ce binding IpAddress 	mand was introduc and output shows th base. Use the <b>show</b> nically configured b the <b>show ip source</b> Lease(sec) 	e dynamically and v <b>ip dhcp snoopin</b> pindings. <b>binding</b> comman Type static dhcp-snooping	ng bind d: VLAN  10 10	Interface GigabitEthernet0/1 GigabitEthernet0/1

### 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 metro IP access or metro access image.

Syntax Description	interface interface-id	(Optional) Display IP source guard configuration on a specific interface.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.

Command Modes User EXEC

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

#### **Examples**

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

. .

Interface Filter-type Filter-mode IP-address Mac-address Vlan	
Incertace Filter-type Filter-mode iP-address Mac-address Vian	
fa0/1 ip active 10.0.0.1 10	
fa0/1 ip active deny-all 11-20	
fa0/2 ip inactive-trust-port	
fa0/3 ip inactive-no-snooping-vlan	
fa0/4 ip-mac active 10.0.0.2 aaaa.bbbb.cccc 10	
fa0/4 ip-mac active 11.0.0.1 aaaa.bbbb.cccd 11	
fa0/4 ip-mac active deny-all deny-all 12-20	
fa0/5 ip-mac active 10.0.0.3 permit-all 10	
fa0/5 ip-mac active deny-all permit-all 11-20	

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

- On the Fast Ethernet 0/1 interface, dynamic host control protocol (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 is on the interface. For VLANs 11 to 20, the second entry shows that a default port access control list (ACL) is applied on the interface for the VLANs on which IP source guard is not configured.
- The Fast Ethernet 0/2 interface is configured as trusted for DHCP snooping.
- On the Fast Ethernet 0/3 interface, DHCP snooping is not enabled on the VLANs to which the interface belongs.

- On the Fast Ethernet 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 Fast Ethernet 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 gigabitethernet0/6 IP source guard is not configured on the interface gi0/6.

elated Commands Command		Description
	ip verify source	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.

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

This command is available only if your switch is running the metro IP access image.

Syntax Description	mcast {appclass   groups   status}	Display the IPC multicast routing information. The keywords have these meanings:
		• <b>appclass</b> —Display the IPC multicast application classes.
		• groups—Display the IPC multicast groups.
		• <b>status</b> —Display the IPC multicast routing status.
	nodes	Display participating nodes.
	ports [open]	Display local IPC ports. The keyword has this meaning:
		• <b>open</b> —(Optional) Display only the open ports.
	queue	Display the contents of the IPC transmission queue.
	rpc	Display the IPC remote-procedure statistics.
	session {all   rx   tx}	Display the IPC session statistics (available only in privileged EXEC mode). The keywords have these meanings:
		• <b>all</b> —Display all the session statistics.
		• <b>rx</b> —Display the sessions statistics for traffic that the switch receives
		• tx—Display the sessions statistics for traffic that the switch forwards.
	verbose	(Optional) Display detailed statistics (available only in privileged EXEC mode).
	status [cumlulative]	Display the status of the local IPC server. The keyword has this meaning:
		• <b>cumlulative</b> —(Optional) Display the status of the local IPC server since the switch was started or restarted.
	zones	Display participating IPC zones. The switch supports one IPC zone.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.

### Command Modes User EXEC

Command History	Release	Modification
	12.2(25)EX	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 example shows how to display the IPC routing status:

Switch>	show	ipc	mcast	status
---------	------	-----	-------	--------

IPC Mcast Status

				Tx	Rx	
makal maaaa				0	0	
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 acknowle	edge	d		0	0	
Total Out of Band Messages				0	0	
Total Out of Band messages ackno	owle	dged		0	0	
Total No Mcast groups				0	0	
Total Retries	0	Total	Timeouts			0
Total OOB Retries	0	Total	OOB Timeouts	5		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 Last
```

		Sent	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
             Туре
                        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
                      FIB Master:DFS.process_level.msgs
  10000.5
             unicast
             unicast FIB Master:DFS.interrupt.msgs
  10000.6
  10000.7
             unicast MDFS RP:Statistics
    port_index = 0 seat_id = 0x10000
                                      last sent = 0
                                                        last heard = 0
  0/2/159
                        Slot 1 :MDFS.control.RIL
  10000.8
             unicast
    port_index = 0 seat_id = 0x10000 last sent = 0
                                                        last heard = 0
  0/0/0
RPC packets:current/peak/total
```

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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 : 1000 Message cache size : Maximum message cache usage : 1000 5000 [max] 0 times message cache crossed 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 heard = 0
                                     last sent = 0
    Msgs requested = 180 Msgs returned = 180
            Unicast Slot 1 :MDFS.control.RIL
  10000.8
    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

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**

d Commands Command		Description	
	clear ipc	Clears the IPC multicast routing statistics.	

### show I2protocol-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]

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	interface interface-id	(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.
	summary	(Optional) Display only Layer 2 protocol summary information.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.

#### Command Modes User EXEC

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

# **Usage Guidelines** After enabling Layer 2 protocol tunneling on an access port, a trunk port, or an IEEE 802.1Q tunnel port by using the **12protocol-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 12protocol-tunnel
```

COS for Encapsulated Packets: 5 Drop Threshold for Encapsulated Packets: 0

Port			-	Encapsulation Counter	n Decapsulation Counter	Drop Counter
 Fa0/3						
ra0/5						
	pagp			0	242500	
	lacp			24268	242640	
	udld			0	897960	
Fa0/4						
, _						
	pagp	1000		24249	242700	1
	lacp			24256	242660	1
	udld			0	897960	1
Gi0/1	cdp			134482	1344820	1
	pagp	1000		0	242500	1
	lacp	500		0	485320	1
	udld	300		44899	448980	1

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

```
Switch> show 12protocol-tunnel summary
COS for Encapsulated Packets: 5
Drop Threshold for Encapsulated Packets: 0
```

Port	Protocol	Shutdown Threshold (cdp/stp/vtp) (pagp/lacp/udld)		Status
		//		up
pag	p lacp udld	//	//	
Fa0/3		//	//	up
pag	p lacp udld	1000//	//	
Fa0/4		//	//	up
pag	p lacp udld	1000/ 500/	//	
Fa0/5	cdp stp vt	p//	//	down
		//	//	
Gi0/1		//	//	down
pag	p	//	1000//	
Gi0/2		//	//	down
pag	p	//	1000//	

Related Commands	Command	Description	
	clear l2protocol-tunnel counters	Clears counters for protocol tunneling ports.	
	l2protocol-tunnel	Enables Layer 2 protocol tunneling for CDP, STP, or VTP packets on an interface.	
	l2protocol-tunnel cos	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]

۵, Note

LACP is available only on network node interfaces (NNIs) or enhanced network interfaces (ENIs).

Syntax Description	channel-group-number	(Optional) Number of the channel group. The range is 1 to 48.	
Syntax Description	counters	Display traffic information.	
	internal	Display internal information.	
	neighbor	Display neighbor information.	
	sys-id	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.	
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .	
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .	
	include	(Optional) Display includes lines that match the specified <i>expression</i> .	
	expression	Expression in the output to use as a reference point.	
Command Modes	User EXEC		
		Modification	
Command Modes Command History	User EXEC		
	User EXEC Release 12.2(25)EX You can enter any show	Modification	
Command History	User EXEC Release 12.2(25)EX You can enter any show specific channel information	Modification         This command was introduced.         lacp command to display the active channel-group information. To display	
Command History	User EXEC           Release           12.2(25)EX           You can enter any show is specific channel information.           If you do not specify a classical content of the specific channel information.	Modification         This command was introduced.         lacp command to display the active channel-group information. To display tion, enter the show lacp command with a channel-group number.	

### Examples

This is an example of output from the **show lacp counters** user EXEC command. Table 2-14 describes the fields in the display.

Switch> <b>show</b>	/ lacp o	counters					
	LACI	PDUs	Mark	ker	Marker F	Response	LACPDUs
Port	Sent	Recv	Sent	Recv	Sent	Recv	Pkts Err
Channel grou	1p:1						
Gi0/1	19	10	0	0	0	0	0
Gi0/2	14	6	0	0	0	0	0

Table 2-14 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
                              LACP port
                                            Admin
                                                       Oper
                                                               Port
                                                                        Port
Port
            Flags
                              Priority
                                            Key
                                                       Кеу
                                                                        State
                    State
                                                               Number
Gi0/1
                              32768
            SA
                    bndl
                                            0x3
                                                       0x3
                                                               0x4
                                                                        0x3D
Gi0/2
            SA
                    bndl
                              32768
                                             0x3
                                                       0x3
                                                               0x5
                                                                        0x3D
```

Table 2-15 describes the fields in the display.

Table 2-15show lacp internal Field Descriptions

Field	Description
State	State of the specific port. These are the allowed values:
	• – —Port is in an unknown state.
	• <b>bndl</b> —Port is attached to an aggregator and bundled with other ports.
	• <b>susp</b> —Port is in a suspended state; it is not attached to any aggregator.
	• <b>hot-sby</b> —Port is in a hot-standby state.
	• <b>indiv</b> —Port is incapable of bundling with any other port.
	• <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).
	• <b>down</b> —Port is down.
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.

Field	Description
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	State variables for the port, encoded as individual bits within a single octet with these meanings:
	• bit0: LACP_Activity
	• bit1: LACP_Timeout
	• bit2: Aggregation
	• bit3: Synchronization
	• bit4: Collecting
	• bit5: Distributing
	• bit6: Defaulted
	• bit7: Expired
	<b>Note</b> In the above list, bit7 is the MSB and bit0 is the LSB.

Table 2-15 show lacp internal Field Descriptions (continued)

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:
                                                         Partner
         Partner
                              Partner
                                            Age
Port
         System ID
                              Port Number
                                                         Flags
Gi0/1
         32768,0007.eb49.5e80 0xC
                                                         SP
                                              19s
         LACP Partner
                             Partner
                                             Partner
         Port Priority
                             Oper Key
                                             Port State
         32768
                             0x3
                                             0x3C
Partner's information:
         Partner
                              Partner
                                                         Partner
         System ID
Port
                              Port Number
                                                         Flags
                                             Age
Gi0/2
         32768,0007.eb49.5e80 0xD
                                                         SP
                                              15s
         LACP Partner
                             Partner
                                            Partner
         Port Priority
                             Oper Key
                                            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.

<b>Related Commands</b>	Command	Description	
	clear lacp	Clears the LACP channel-group information.	
	lacp port-priority	Configures the LACP port priority.	
	lacp system-priority	Configures the LACP system priority.	

# show link state group

Use the **show link state group** global configuration command to display the link-state group information.

show link state group [number] [detail] [ | {begin | exclude | include} expression]

This command is available only if your switch is running the metro IP access or metro access image.

Syntax Description	number	(Optional) Number of the link-state group.
	detail	(Optional) Specify that detailed information appears.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Defaults	There is no default.	
Command Modes	Privileged EXEC	
Command History	Release	
oominanu matoly	nelease	Modification
oominanu mətoly	12.2(25)SEG	This command was introduced.
	12.2(25)SEG Use the <b>show link sta</b> command without key	This command was introduced. <b>te group</b> command to display the link-state group information. Enter this
	12.2(25)SEG Use the <b>show link sta</b> command without key to display information Enter the <b>detail</b> keywe <b>state group detail</b> con or that have upstream	This command was introduced. <b>te group</b> command to display the link-state group information. Enter this words to display information about all link-state groups. Enter the group number a specific to the group. ord to display detailed information about the group. The output for the <b>show link</b>
Usage Guidelines	12.2(25)SEG Use the <b>show link sta</b> command without key to display information Enter the <b>detail</b> keywe <b>state group detail</b> con or that have upstream configuration for a gro Expressions are case s	This command was introduced. <b>te group</b> command to display the link-state group information. Enter this words to display information about all link-state groups. Enter the group number a specific to the group. ord to display detailed information about the group. The output for the <b>show link</b> mmand displays only those link-state groups that have link-state tracking enabled or downstream interfaces (or both) configured. If there is no link-state group
	12.2(25)SEG Use the <b>show link sta</b> command without key to display information Enter the <b>detail</b> keywe <b>state group detail</b> con or that have upstream configuration for a gro Expressions are case s are not displayed, but	This command was introduced. <b>te group</b> command to display the link-state group information. Enter this words to display information about all link-state groups. Enter the group number a specific to the group. ord to display detailed information about the group. The output for the <b>show link</b> mmand displays only those link-state groups that have link-state tracking enabled or downstream interfaces (or both) configured. If there is no link-state group bup, it is not shown as enabled or disabled. sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i>

This is an example of output from the **show link state group detail** command:

Switch> show link state group detail
(Up):Interface up (Dwn):Interface Down (Dis):Interface disabled
Link State Group: 1 Status: Enabled, Down
Upstream Interfaces : Gi0/15(Dwn) Gi0/16(Dwn)
Downstream Interfaces : Gi0/11(Dis) Gi0/12(Dis) Gi0/13(Dis) Gi0/14(Dis)
Link State Group: 2 Status: Enabled, Down
Upstream Interfaces : Gi0/15(Dwn) Gi0/16(Dwn) Gi0/17(Dwn)
Downstream Interfaces : Gi0/11(Dis) Gi0/12(Dis) Gi0/13(Dis) Gi0/14(Dis)
(Up):Interface up (Dwn):Interface Down (Dis):Interface disabled

<b>Related Commands</b>	Command	Description	
	link state group	Configures an interface as a member of a link-state group.	
	link state track	Enables a link-state group.	
	show running-config	Displays the operating configuration. For syntax information, use this link to the Cisco IOS Release 12.2 Command Reference listing page: http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/prod_comm and_reference_list.html Select the Cisco IOS Commands Master List, Release 12.2 to navigate to the command.	

### show location

Use the show location user EXEC command to display location information for an endpoint.

show location admin-tag | [ | {begin | exclude | include} expression]

show location civic-location {identifier id number | interface interface-id | static } | [ | {begin |
 exclude | include } expression]

show location elin-location {identifier id number | interface interface-id | static } | [ | {begin |
 exclude | include } expression]

Syntax Description	admin-tag	Display administrative tag or site information.		
	civic-location	Display civic location information.		
	elin-location	Display emergency location information (ELIN).		
	identifier <i>id</i>	Specify the ID for the civic location or the elin location. The id range is 1 to 4095.		
	interface interface-id	Display location information for the specified interface or all interfaces. Valid interfaces include physical ports.		
	static	Display static configuration information.(Optional) Display begins with the line that matches the <i>expression</i> .(Optional) Display excludes lines that match the <i>expression</i> .(Optional) Display includes lines that match the specified <i>expression</i> .		
	begin			
	exclude			
	include			
	expression	Expression in the output to use as a reference point.		
Command Modes	User EXEC			

Command History	Release	Modification
	12.1(40)SE	This command was introduced.

#### **Usage Guidelines**

es Use the show location command to display location information for an endpoint.

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 location civic-location** command that displays location information for an interface:

```
Switch> show location civic interface gigabitethernet2/0/1
```

Civic location information

Identifier	: 1
County	: Santa Clara
Street number	: 3550
Building	: 19
Room	: C6
Primary road name	: Cisco Way
City	: San Jose
State	: CA
Country	: US

This is an example of output from the **show location civic-location** command that displays all the civic location information:

Switch> show location civic-location static

Civic location informat	ion
Identifier County Street number Building Room Primary road name City State Country	<pre> : 1 : Santa Clara : 3550 : 19 : C6 : Cisco Way : San Jose : CA : US</pre>
Ports	: Gi2/0/1
Identifier Street number Street number suffix Landmark Primary road name City Country	: 2 : 24568 : West : Golden Gate Bridge : 19th Ave : San Francisco : US

This is an example of output from the **show location elin-location** command that displays the emergency location information:

Switch> show location elin-location identifier 1

This is an example of output from the **show location elin static** command that displays all emergency location information:

Switch> show location elin static Elin location information ------Identifier : 1 Elin : 14085553881 Ports : Gi2/0/2 ------Identifier : 2 Elin : 18002228999

### **Related Commands**

nands	Command	Description
	location (global configuration)	Configures the global location information for an endpoint.
	location (interface configuration)	Configures the location information for an interface.

### 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	interface interface-id	(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 (available only in privileged EXEC mode).
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
Usage Guidelines	-	This command was introduced. nsitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> nes that contain <i>Output</i> appear.
Usage Guidelines Examples	Expressions are case ser do not appear, but the li This is an example of ou	This command was introduced. nsitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> nes that contain <i>Output</i> appear. utput from the <b>show mac-access group</b> user EXEC command. In this display, 0/2 has the MAC access list <i>macl_e1</i> applied to inbound traffic; no MAC ACLs

This is an example of output from the **show mac access-group interface fastethernet0/1** command:

Switch# show mac access-group interface fastethernet0/1
Interface FastEthernet0/1:
 Inbound access-list is macl\_e1

Related Commands

CommandDescriptionmac access-groupApplies 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]

Syntax Description	begin	(	Optional) Dis	splay begins with the line that matches the <i>expression</i> .
-,	exclude		1	splay excludes lines that match the <i>expression</i> .
	include		1	splay includes lines that match the specified <i>expression</i> .
	expression	E	Expression in	the output to use as a reference point.
Command Modes	User EXEC			
Command History	Release	Ν	Aodification	
	12.2(25)EX	К Т	This command	d was introduced.
-	do not appe	ar, but the lines	that contain	
Usage Guidelines Examples	do not appe This is an e: Switch> <b>sh</b>	ar, but the lines	that contain that contain that contain the short from the short short contains the short short contains the	
-	do not appe This is an e: Switch> sha	ar, but the lines xample of outpu ow mac address	that contain of the share of th	<i>Output</i> appear. <b>now mac address-table</b> command:
-	do not appe This is an e: Switch> sha	ar, but the lines xample of outpu ow mac address Mac Address Ta 	that contain of at from the sh s-table uble Type 	Output appear. now mac address-table command: Ports
-	do not appe This is an e: Switch> sha Ulan Maa All 000	ar, but the lines xample of outpu ow mac address Mac Address Ta  c Address  00.0000.0001	that contain of the share of th	Output appear. now mac address-table command: Ports
-	do not appe This is an e: Switch> sho I Vlan Mac All 000 All 000	ar, but the lines xample of outpu ow mac address Mac Address Ta 	that contain of at from the sh s-table uble  Type  STATIC	Output appear. now mac address-table command: Ports  CPU
-	do not appe This is an e: Switch> sho I Vlan Mac All 000 All 000 All 000	ar, but the lines xample of outpu ow mac address Mac Address Ta 	that contain of at from the sh s-table uble  Type  STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU
-	do not appe This is an e: Switch> sho I Vlan Mac All 000 All 000 All 000	ar, but the lines xample of outpu ow mac address Mac Address Ta  c Address  00.0000.0001 00.0000.0002 00.0000.0003	that contain of at from the sh s-table able  STATIC STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU CPU
-	do not appe This is an e: Switch> sho I Vlan Mag  All 000 All 000 All 000 All 000 All 000 All 000 All 000	ar, but the lines xample of outpu ow mac address Mac Address Ta 	that contain of at from the sh s-table bble  STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU CPU CPU CPU CPU CPU CPU
-	do not appe This is an e: Switch> sho I Vlan Mag All 000 All 000 All 000 All 000 All 010 All 010 All 010	ar, but the lines xample of outpu ow mac address Mac Address Ta 	that contain of at from the sh s-table able  STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU CPU CPU CPU CPU CPU CPU
-	do not appe This is an e: Switch> sho I Vlan Mag  All 000 All 000 All 000 All 000 All 010 All 010 All 010 All 010	ar, but the lines xample of outpu ow mac address Mac Address Ta  c Address  00.0000.0001 00.0000.0002 00.0000.0003 00.0000.0003 00.0000.00	that contain of at from the sh s-table able  STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU CPU CPU CPU CPU CPU CPU
-	do not appe This is an e: Switch> sho I Vlan Maa  All 000 All 000 All 000 All 000 All 010 All 010 All 010 All 010 All 010 All 010	ar, but the lines xample of outpu ow mac address Mac Address Ta  c Address  00.0000.0001 00.0000.0002 00.0000.0002 00.0000.00	that contain of at from the sh s-table able  STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU CPU CPU CPU CPU CPU CPU
-	do not appe This is an e: Switch> sho I Vlan Maa  All 000 All 000 All 000 All 000 All 010 All 010 All 010 All 010 All 010 All 010 All 010 All 010	ar, but the lines xample of outpu ow mac address Mac Address Ta  c Address  00.0000.0001 00.0000.0002 00.0000.0003 00.0000.0003 00.0000.00	that contain of at from the sh s-table able  STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC STATIC	Output appear. now mac address-table command: Ports  CPU CPU CPU CPU CPU CPU CPU CPU

Total Mac Addresses for this criterion: 12

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

### show mac address-table address

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

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

Syntax Description	mac-address	Specify the 4	48-bit MAC address; the valid format is H.H.H.
	interface interface-id		isplay information for a specific interface. Valid interfaces ical ports and port channels.
	vlan vlan-id	(Optional) D 4094.	isplay entries for the specific VLAN only. The range is 1 to
	begin	(Optional) D	isplay begins with the line that matches the <i>expression</i> .
	exclude	(Optional) D	isplay excludes lines that match the <i>expression</i> .
	include	(Optional) D	isplay includes lines that match the specified <i>expression</i> .
	expression	Expression in	n the output to use as a reference point.
Command Modes	User EXEC		
Command History	Release	Modification	
	12.2(25)EX	T1.:	
Usage Guidelines	Expressions are case sen	nsitive. For example	nd was introduced. mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i>
	Expressions are case sen do not appear, but the lin	nsitive. For exan nes that contair	mple, if you enter I <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear.
Usage Guidelines Examples	Expressions are case sen do not appear, but the lin This is an example of ou	nsitive. For examples that contain the substitution of the second s	mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear. Show mac address-table address command:
	Expressions are case sen do not appear, but the lin This is an example of ou Switch# <b>show mac addr</b> Mac Address	nsitive. For examples that contain that contain that contain the support of the second	mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear. Show mac address-table address command: ress 0002.4b28.c482
	Expressions are case sen do not appear, but the lin This is an example of ou Switch# <b>show mac addr</b> Mac Address Vlan Mac Address	nsitive. For example nes that contain utput from the s ress-table add Table	mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear. Show mac address-table address command: ress 0002.4b28.c482
	Expressions are case sen do not appear, but the lin This is an example of ou Switch# show mac addr Mac Address	nsitive. For example nes that contain utput from the s ress-table add Table Type Po	mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear. <b>show mac address-table address</b> command: <b>ress 0002.4b28.c482</b>  rts 
	Expressions are case sen do not appear, but the lin This is an example of ou Switch# show mac addr Mac Address 	nsitive. For example nes that contain utput from the s ress-table add Table Type Po	mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear. <b>show mac address-table address</b> command: <b>ress 0002.4b28.c482</b>  rts 
Examples	Expressions are case sen do not appear, but the lin This is an example of ou Switch# show mac addr Mac Address Vlan Mac Address All 0002.4b28.c48 Total Mac Addresses f	nsitive. For example nes that contain utput from the s ress-table add Table Type Po 	mple, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> a <i>Output</i> appear. Show mac address-table address command: ress 0002.4b28.c482  rts  U rion: 1
Examples	Expressions are case sendo not appear, but the line This is an example of ou Switch# show mac addr Mac Address Vlan Mac Address All 0002.4b28.c48 Total Mac Addresses f	nsitive. For example nes that contain utput from the s ress-table add Table Type Po  22 STATIC CP for this crite	mple, if you enter   exclude output, the lines that contain <i>output</i> a <i>Output</i> appear. show mac address-table address command: ress 0002.4b28.c482  rts  U rion: 1 Description

Command	Description
show mac address-table interface	Displays the MAC address table information for the specified interface.
show mac address-table notification	Displays the MAC address notification settings for all interfaces or the specified interface.
show mac address-table static	Displays static MAC address table entries only.
show mac address-table vlan	Displays the MAC address table information for the specified VLAN.

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# show mac address-table aging-time

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

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

Syntax Description	vlan vlan-id	(Optional) is 1 to 409	) Display aging time information for a specific VLAN. The range 94.
	begin	(Optional)	) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional)	) Display excludes lines that match the <i>expression</i> .
	include	(Optional)	) Display includes lines that match the specified <i>expression</i> .
	expression	Expressio	n in the output to use as a reference point.
Command Modes	User EXEC		
Command History	Release	Modificat	ion
	12.2(25)EX	This com	nand was introduced.
Examples	This is an example of	output from th	e show mac address-table aging-time command:
·	Switch> <b>show mac ad</b> Vlan Aging Time	-	
	1 300		
	This is an example of	output from th	e show mac address-table aging-time vlan 10 command:
	Switch> <b>show mac ad</b> Vlan Aging Time	•	
	10 300		
Related Commands	Command		Description
Related Commands	Command mac address-table a	ging-time	<b>Description</b> Sets the length of time that a dynamic entry remains in the MAC address table after the entry is used or updated.

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

# show mac address-table count

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

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

Syntax Description	vlan vlan-id	(Optional) Display 4094.	the number of addresses for a specific VLAN. The range is 1 to
	begin	(Optional) Display	begins with the line that matches the expression.
	exclude	(Optional) Display	excludes lines that match the expression.
	include	(Optional) Display	includes lines that match the specified expression.
	expression	Expression in the c	putput to use as a reference point.
Command Modes	User EXEC		
Command History	Release	Modificatio	n
	12.2(25)EX	This comma	and was introduced.
Usage Guidelines	If no VLAN num	ber is specified, the a	address count for all VLANs appears.
	Expressions are c do not appear, bu This is an examp	case sensitive. For exa tt the lines that contai le of output from the	n <i>Output</i> appear. show mac address-table count command:
Usage Guidelines Examples	Expressions are of do not appear, bu This is an examp Switch# <b>show ma</b> Mac Entries for	case sensitive. For exa to the lines that contain le of output from the ac address-table con	<pre>ample, if you enter   exclude output, the lines that contain output n Output appear. show mac address-table count command:</pre>
	Expressions are of do not appear, bu This is an examp Switch# <b>show ma</b> Mac Entries for	le of output from the <b>a address-table con</b> Vlan : 1 Count : 2 Count : 0	<pre>ample, if you enter   exclude output, the lines that contain output n Output appear. show mac address-table count command:</pre>
Examples	Expressions are of do not appear, but This is an examp Switch# show ma Mac Entries for Dynamic Address Static Address	le of output from the <b>a address-table con</b> Vlan : 1 Count : 2 Count : 0	<pre>ample, if you enter   exclude output, the lines that contain output n Output appear. show mac address-table count command:</pre>
Examples	Expressions are of do not appear, but This is an examp Switch# show ma Mac Entries for Dynamic Address Static Address Total Mac Address <b>Command</b>	le of output from the <b>a address-table con</b> Vlan : 1 Count : 2 Count : 0	ample, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i> n <i>Output</i> appear. <b>show mac address-table count</b> command:
Examples	Expressions are of do not appear, but This is an examp Switch# show ma Mac Entries for Dynamic Address Static Address Total Mac Address Command show mac addre	case sensitive. For example of output from the <b>address-table con</b> Vlan : 1 Count : 2 Count : 2 Count : 0 esses : 2	ample, if you enter   exclude output, the lines that contain output n Output appear. show mac address-table count command: unt Description Displays MAC address table information for the specified MAC address.
Examples	Expressions are of do not appear, but This is an examp Switch# show ma Mac Entries for Dynamic Address Static Address Total Mac Address <b>Command</b> show mac address	case sensitive. For examination of output from the second	ample, if you enter   exclude output, the lines that contain output n Output appear. show mac address-table count command: unt Description Displays MAC address table information for the specified MAC address.
	Expressions are of do not appear, but This is an examp Switch# show ma Mac Entries for Dynamic Address Static Address Total Mac Address Total Mac Address Static Address Total Mac Address Show mac address	case sensitive. For examination of the lines that contain the lines that contain the lines that contain the address-table cont to Vlan : 1 Count : 2 Count : 2 Count : 0 esses : 2 ess-table address ess-table aging-time	Imple, if you enter   exclude output, the lines that contain output is not output appear. show mac address-table count command: Int Description Displays MAC address table information for the specified MAC address. Displays the aging time in all VLANs or the specified VLAN.

Command	Description
show mac address-table static	Displays static MAC address table entries only.
show mac address-table vlan	Displays the MAC address table information for the specified VLAN.

# show mac address-table dynamic

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

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

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

Command Modes User EXEC

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

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

Examples

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

Switch>	show mac address	s-table d	lynamic
	Mac Address Ta	able	
Vlan	Mac Address	Туре	Ports
1	0030.b635.7862	DYNAMIC	Gi0/2
1	00b0.6496.2741	DYNAMIC	Gi0/2
Total Ma	ac Addresses for	this cr	iterion: 2

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

### show mac address-table interface

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

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

Syntax Description			
eymax beeenpren	interface-id	Specify an int channels.	terface type; valid interfaces include physical ports and port
	vlan vlan-id	(Optional) Di	splay entries for a specific VLAN; the range is 1 to 4094.
	begin	(Optional) Di	splay begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Di	splay excludes lines that match the expression.
	include	(Optional) Di	splay includes lines that match the specified expression.
	expression	Expression in	the output to use as a reference point.
Command Modes	User EXEC		
Command History	Release	Modification	
	12.2(25)EX	This comman	d was introduced.
Examples	Switch> <b>show mac</b>	-	how mac address-table interface command: erface gigabitethernet0/2
	Vlan Mac Addre	ss Type Por	
	Vlan Mac Addre  1 0030.b635	ss Type Por  .7862 DYNAMIC Gi0	ts  0/2
	Vlan Mac Addre  1 0030.b635 1 00b0.6496	ss Type Por	rts  )/2 )/2
Related Commands	Vlan Mac Addre  1 0030.b635 1 00b0.6496	ss Type Por  .7862 DYNAMIC Gi0 .2741 DYNAMIC Gi0	rts  0/2 0/2 tion: 2
Related Commands	Vlan Mac Addre  1 0030.b635 1 00b0.6496 Total Mac Address	ss Type Por  .7862 DYNAMIC Gi0 .2741 DYNAMIC Gi0 es for this criter	rts  0/2 0/2
Related Commands	Vlan Mac Addre 1 0030.b635 1 00b0.6496 Total Mac Address Command	ss Type Por 	Description Displays MAC address table information for the specified

Command	Description
show mac address-table dynamic	Displays dynamic MAC address table entries only.
show mac address-table notification	Displays the MAC address notification settings for all interfaces or the specified interface.
show mac address-table static	Displays static MAC address table entries only.
show mac address-table vlan	Displays the MAC address table information for the specified VLAN.

# show mac address-table learning

Use the **show mac address-table learning** user EXEC command to display the status of MAC address learning for all VLANs or the specified VLAN.

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

This command is available only when the switch is running the metro IP access or metro access image.

Syntax Description	vlan vlan-id	(Optional) Display information for a specific VLAN. The range is 1 to 4094.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	VLANs and whether MAC address learning is enable learning status on an indiv	
Usage Guidelines	VLANs and whether MAG address learning is enable learning status on an indiv Expressions are case sense	C address learning is enabled or disabled on them. The default is that MAC d on all VLANs. Use the command with a specific VLAN ID to display the vidual VLAN.
	VLANs and whether MAG address learning is enable learning status on an indiv Expressions are case sense do not appear, but the line This is an example of outp	C address learning is enabled or disabled on them. The default is that MAC d on all VLANs. Use the command with a specific VLAN ID to display the vidual VLAN. tive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> is that contain <i>Output</i> appear. ut from the <b>show mac address-table learning</b> user EXEC command showing
	VLANs and whether MAG address learning is enable learning status on an indiv Expressions are case sense do not appear, but the line This is an example of outp that MAC address learnin	C address learning is enabled or disabled on them. The default is that MAC d on all VLANs. Use the command with a specific VLAN ID to display the vidual VLAN. tive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> is that contain <i>Output</i> appear. ut from the <b>show mac address-table learning</b> user EXEC command showing g is disabled on VLAN 200:
	VLANs and whether MAG address learning is enable learning status on an indiv Expressions are case sense do not appear, but the line This is an example of outp that MAC address learnin Switch> show mac address VLAN Learning Status	C address learning is enabled or disabled on them. The default is that MAC d on all VLANs. Use the command with a specific VLAN ID to display the vidual VLAN. tive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> s that contain <i>Output</i> appear. ut from the <b>show mac address-table learning</b> user EXEC command showing g is disabled on VLAN 200: ss-table learning
Usage Guidelines Examples	VLANs and whether MAG address learning is enable learning status on an indiv Expressions are case sense do not appear, but the line This is an example of outp that MAC address learnin Switch> show mac address	C address learning is enabled or disabled on them. The default is that MAC d on all VLANs. Use the command with a specific VLAN ID to display the vidual VLAN. tive. For example, if you enter I <b>exclude output</b> , the lines that contain <i>output</i> s that contain <i>Output</i> appear. ut from the <b>show mac address-table learning</b> user EXEC command showing g is disabled on VLAN 200: ss-table learning
	VLANs and whether MAGaddress learning is enablelearning status on an indivExpressions are case sensedo not appear, but the lineThis is an example of outpthat MAC address learninSwitch> show mac addressVLANLearning Status1yes100yes	C address learning is enabled or disabled on them. The default is that MAC d on all VLANs. Use the command with a specific VLAN ID to display the vidual VLAN. tive. For example, if you enter I <b>exclude output</b> , the lines that contain <i>output</i> s that contain <i>Output</i> appear. ut from the <b>show mac address-table learning</b> user EXEC command showing g is disabled on VLAN 200: ss-table learning

# show mac address-table move update

Use the **show mac address-table move update** user EXEC command to display the MAC address-table move update information on the switch.

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

This command is available only when the switch is running the metro IP access or metro access image.

Syntax Description	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)SEG	This command was introduced.
Usage Guidelines	_	e sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain output
Usage Guidelines	_	e sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain output he lines that contain <i>Output</i> appear.
Usage Guidelines Examples	do not appear, but t	
	do not appear, but the second	he lines that contain <i>Output</i> appear. of output from the <b>show mac address-table move update</b> command: address-table move update
	do not appear, but t This is an example	he lines that contain <i>Output</i> appear. of output from the <b>show mac address-table move update</b> command: <b>address-table move update</b> 4630.1780
	do not appear, but the This is an example Switch> <b>show mac</b> Switch-ID : 010b. Dst mac-address : Vlans/Macs support	he lines that contain <i>Output</i> appear. of output from the <b>show mac address-table move update</b> command: <b>address-table move update</b> 4630.1780 0180.c200.0010 ted : 1023/8320
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s	he lines that contain <i>Output</i> appear. of output from the <b>show mac address-table move update</b> command: <b>address-table move update</b> 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s	he lines that contain <i>Output</i> appear. of output from the <b>show mac address-table move update</b> command: <b>address-table move update</b> 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence Rcv last interfac	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0 e : Po2
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence Rcv last interfac Rcv last src-mac-	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0 e : PO2 address : 0003.fd6a.8701
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence Rcv last interfac Rcv last src-mac-	he lines that contain <i>Output</i> appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0 e : Po2 address : 0003.fd6a.8701 D : 0303.fd63.7600
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence Rcv last sequence Rcv last sitcerfac Rcv last sitcerfac Rcv last switch-I Xmt packet count	<pre>he lines that contain Output appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0 e : Po2 address : 0003.fd6a.8701 D : 0303.fd63.7600 : 0 this min : 0</pre>
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence Rcv last sequence Rcv last sitch-I Cr last switch-I Xmt packet count Xmt packet count	<pre>he lines that contain Output appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rcv Off/On, Xmt Off/On in : Rcv 40, Xmt 60 : 10 cket count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0 e : Po2 address : 0003.fd6a.8701 D : 0303.fd63.7600 : 0 this min : 0 eed count : 0</pre>
	do not appear, but the This is an example Switch> show mac Switch-ID : 010b. Dst mac-address : Vlans/Macs suppor Default/Current s Max packets per m Rcv packet count Rcv conforming pa Rcv invalid packe Rcv packet count Rcv threshold exc Rcv last sequence Rcv last sequence Rcv last sitcerfac Rcv last sitcerfac Rcv last switch-I Xmt packet count	<pre>he lines that contain Output appear. of output from the show mac address-table move update command: address-table move update 4630.1780 0180.c200.0010 ted : 1023/8320 ettings: Rev Off/On, Xmt Off/On in : Rev 40, Xmt 60 : 10 cket count : 5 t count : 5 t count : 0 this min : 0 eed count : 0 # this min : 0 e : Po2 address : 0003.fd6a.8701 D : 0303.fd63.7600 : 0 this min : 0 eed count : 0 il cnt : 0</pre>

<b>Related Commands</b>	Command	Description
	clear mac address-table move update	Clears the MAC address-table move update counters.
	<pre>mac address-table move update {receive   transmit}</pre>	Configures MAC address-table move update on the switch.

# show mac address-table notification

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

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

Syntax Description	interface	(Optional) Display information for all interfaces. Valid interfaces include physical ports and port channels.
	interface-id	(Optional) Display information for the specified interface. Valid interfaces include physical ports and port channels.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	flags for that inter	
	-	se sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> appear.
Examples	This is an example	e of output from the <b>show mac address-table notification</b> command:
	MAC Notification Interval between Number of MAC Ad Number of MAC Ad Number of Notifi Maximum Number o Current History	Traps are Enabled
	History Index 0, MAC Changed Mess	Entry Timestamp 1032254, Despatch Timestamp 1032254 age :

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 : MAC Addr: 0000.0000.0000 Module: 0 Operation: Deleted Vlan: 2 Port: 1 Operation: Deleted Vlan: 2MAC Addr: 0000.0000.0001 Module: 0Operation: Deleted Vlan: 2MAC Addr: 0000.0000.0002 Module: 0 Port: 1 Port: 1 Operation: Deleted Vlan: 2 MAC Addr: 0000.0000.0003 Module: 0 Port: 1

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

# show mac address-table static

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

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

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

### **Command Modes** User EXEC

Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	-	se sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> appear.
Examples		of output from the <b>show mac address-table static</b> command:
		address-table static

	Mac Address T	able	
Vlan	Mac Address	Туре	Ports
A11	0100.0ccc.cccc	STATIC	CPU
A11	0180.c200.0000	STATIC	CPU
A11	0100.0ccc.cccd	STATIC	CPU
A11	0180.c200.0001	STATIC	CPU
A11	0180.c200.0004	STATIC	CPU
A11	0180.c200.0005	STATIC	CPU
4	0001.0002.0004	STATIC	Drop
6	0001.0002.0007	STATIC	Drop
Total	Mac Addresses for	this cr	iterion: 8

### Related Commands C

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

# show mac address-table vlan

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

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

Syntax Description	vlan-id	(Optional)	Display	addresses for a specific VLAN. The range is 1 to 4094.
	begin	(Optional)	Display	begins with the line that matches the <i>expression</i> .
	exclude	(Optional)	Display	excludes lines that match the expression.
	include	(Optional)	Display	includes lines that match the specified expression.
	expression	Expression	n in the o	utput to use as a reference point.
Command Modes	User EXEC			
Command History	Release		Modifica	tion
	12.2(25)EX	-	This com	mand was introduced.
Examples	 This is an ex	xample of outr	out from t	the show mac address-table vlan 1 command:
Examples	Switch> <b>sh</b> a N	w mac addres Mac Address I	<b>s-table</b> able	vlan 1
		c Address	Туре	Ports
	1 010	0.0ccc.cccc	STATIC	СРИ
		0.0ccc.cccc 0.c200.0000	STATIC STATIC	CPU CPU
	1 018		STATIC	
	1 018 1 010 1 018	30.c200.0000	STATIC	СРИ
	1 018 1 010 1 018	30.c200.0000 00.0ccc.cccd	STATIC STATIC	CPU CPU
	1 018 1 010 1 018 1 018 1 018	30.c200.0000         00.0ccc.cccd         30.c200.0001         30.c200.0002         30.c200.0003	STATIC STATIC STATIC STATIC STATIC	CPU CPU CPU
	1 018 1 010 1 018 1 018 1 018 1 018	30.c200.0000         00.0ccc.cccd         30.c200.0001         30.c200.0002         30.c200.0003         30.c200.0003	STATIC STATIC STATIC STATIC STATIC STATIC	CPU CPU CPU CPU
	1 018 1 010 1 018 1 018 1 018 1 018 1 018	30.c200.0000         00.0ccc.cccd         30.c200.0001         30.c200.0002         30.c200.0003         30.c200.0005         30.c200.0006	STATIC STATIC STATIC STATIC STATIC STATIC STATIC	CPU CPU CPU CPU CPU
	1 018 1 010 1 018 1 018 1 018 1 018 1 018 1 018	30.c200.0000         00.0ccc.cccd         30.c200.0001         30.c200.0002         30.c200.0003         30.c200.0003	STATIC STATIC STATIC STATIC STATIC STATIC STATIC	CPU CPU CPU CPU CPU CPU CPU

### Related Commands Co

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

# 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]

(Optional) Display information about specified SPAN sessions.numberSpecify the number of the SPAN or RSPAN session. The range is 1 to 66.Display all SPAN sessions.Display only local SPAN sessions.StDisplay 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.NoteThis keyword is available only in privileged EXEC mode.Display only remote SPAN sessions.(Optional) Display detailed information about the specified sessions.Display begins with the line that matches the <i>expression</i> .eDisplay excludes lines that match the <i>expression</i> .eDisplay includes lines that match the specified <i>expression</i> .onExpression in the output to use as a reference point.
Display all SPAN sessions.         Display only local SPAN sessions.         St       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.         Note       This keyword is available only in privileged EXEC mode.         Display only remote SPAN sessions.       (Optional) Display detailed information about the specified sessions.         Display begins with the line that matches the <i>expression</i> .       e         Display includes lines that match the specified <i>expression</i> .
Display only local SPAN sessions.         St       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.         Note       This keyword is available only in privileged EXEC mode.         Display only remote SPAN sessions.       (Optional) Display detailed information about the specified sessions.         Display begins with the line that matches the <i>expression</i> .       e         Display includes lines that match the specified <i>expression</i> .
St       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.         Note       This keyword is available only in privileged EXEC mode.         Display only remote SPAN sessions.       (Optional) Display detailed information about the specified sessions.         Display begins with the line that matches the <i>expression</i> .       e         Display includes lines that match the specified <i>expression</i> .
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.NoteThis keyword is available only in privileged EXEC mode.Display only remote SPAN sessions.Display only remote SPAN sessions.(Optional) Display detailed information about the specified sessions.Display begins with the line that matches the expression.eDisplay excludes lines that match the expression.eDisplay includes lines that match the specified expression.
Display only remote SPAN sessions.         (Optional) Display detailed information about the specified sessions.         Display begins with the line that matches the <i>expression</i> .         e       Display excludes lines that match the <i>expression</i> .         e       Display includes lines that match the specified <i>expression</i> .
(Optional) Display detailed information about the specified sessions.         Display begins with the line that matches the <i>expression</i> .         e       Display excludes lines that match the <i>expression</i> .         e       Display includes lines that match the specified <i>expression</i> .
Display begins with the line that matches the expression.eDisplay excludes lines that match the expression.eDisplay includes lines that match the specified expression.
e       Display excludes lines that match the <i>expression</i> .         e       Display includes lines that match the specified <i>expression</i> .
Display includes lines that match the specified <i>expression</i> .
pn Expression in the output to use as a reference point
EC
Modification
EX This command was introduced.

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:
                Fa0/24
   TX Only:
Both:
                None
                Fa0/1-2,Fa0/1-5
Destination Ports:Fa0/18
   Encapsulation:Replicate
Session 2
_____
Type
          :Remote Source Session
Source Ports:
Source VLANs:
TX Only: 10
                 1-9
   Both:
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: Fa0/24
TX Only: None
Both: Fa0/1-2,Fa0/1-5
Destination Ports:Fa0/18
Encapsulation:Replicate
```

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
_____
                 :Local Session
Туре
Source Ports
                 :
   rce Ports :
Both :Fa0/2
Destination Ports :Fa0/3
   Encapsulation :Replicate
         Ingress:Enabled, default VLAN = 5
   Ingress encapsulation:DOT1Q
Session 2
_____
Type
                 :Local Session
Source Ports
                 :
                 :Fa0/1
   Both
Destination Ports :Fa0/4
   Encapsulation :Replicate
```

Ingress encapsulation:DOT1Q

Ingress:Enabled

<b>Related Commands</b>	Command	Description
	monitor session	Starts or modifies a SPAN or RSPAN session.

Γ

### 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	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Examples	This is an example of	of output from the <b>show mvr</b> command:
Examples	Switch# <b>show mvr</b> MVR Running: TRUE MVR multicast VLAN	-
	MVR Current multic	response time: 5 (tenths of sec)

Related Commands	Command	Description
	mvr (global configuration)	Enables and configures multicast VLAN registration on the switch.
	mvr (interface configuration)	Configures MVR ports.
	show mvr interface	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.
	show mvr members	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	interface-id	(Optional) Display MVR type, status, and Immediate Leave setting for the interface.
		Valid interfaces include physical ports (including type, module, and port number.
	members	(Optional) Display all MVR groups to which the specified interface belongs.
	vlan vlan-id	(Optional) Display all MVR group members on this VLAN. The range is 1 to 4094.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12.2(35)SE	The Mode and VLAN fields were added to the output display.

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 **show mvr interface** *interface-id* command and the specified port is a non-MVR port, the output displays NON MVR in the Type field. For active MVR ports, it displays the port type (RECEIVER or SOURCE), mode (access or trunk), VLAN, status, and Immediate-Leave setting.

If you enter the members keyword, all MVR group members on the 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 mvr interface** command:

### Switch# show mvr interface

DWICCIII	DIIOW MUL	Incollago			
Port	Туре	Mode	VLAN	Status	Immediate Leave
Fa0/1	Receiver	Trunk	1	ACTIVE/UP	DISABLED
Fa0/1	Receiver	Trunk	2000	ACTIVE/DOWN	DISABLED
Fa0/2	Receiver	Trunk	2	ACTIVE/UP	DISABLED
Fa0/2	Receiver	Trunk	3000	ACTIVE/UP	DISABLED
Fa0/3	Receiver	Trunk	2	ACTIVE/UP	DISABLED
Fa0/3	Receiver	Trunk	3000	ACTIVE/UP	DISABLED
Fa0/10	Source	Access	10	ACTIVE/UP	DISABLED

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 fastethernet0/10** command:

switch#	show mvr inter	face fa0/10			
Port	Туре	Mode	VLAN	Status	Immediate Leave
Fa0/10	RECEIVER	Trunk	201	ACTIVE/DOWN	DISABLED

This is an example of output from the **show mvr interface fastethernet0/1** command. In this example, the port is not an MVR member:

switch#	show mvr interf	ace fa0/1			
Port	Туре	Mode	VLAN	Status	Immediate Leave
Fa0/1	NON MVR	Access	0	INACTIVE	DISABLED

This is an example of output from the show mvr interface gigabitethernet0/1 members command:

Switch#	show	mvr inte	erface	gigabitet	hernet0/1	members
239.255.	0.0	vlan	202	DYNAMIC	ACTIVE	
239.255.	0.1	vlan	202	DYNAMIC	ACTIVE	
239.255.	0.2	vlan	202	DYNAMIC	ACTIVE	
239.255.	0.3	vlan	203	DYNAMIC	ACTIVE	
239.255.	0.4	vlan	203	DYNAMIC	ACTIVE	
239.255.	0.5	vlan	203	DYNAMIC	ACTIVE	

### Related Commands

Command	Description
mvr (global configuration)	Enables and configures multicast VLAN registration on the switch.
mvr (interface configuration)	Configures MVR ports.
show mvr	Displays the global MVR configuration on the switch.
show mvr members	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]

I begin       (Optional) Display begins with the life that matches the expression.         I exclude       (Optional) Display excludes lines that match the expression.         I include       (Optional) Display includes lines that match the specified expression.         expression       Expression in the output to use as a reference point.         Command Modes       Privileged EXEC         Command History       Release       Modification         I2.2(25)EX       This command was introduced.         I2.2(25)EX       This command was introduced.         I2.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, source ports are members of all multicast groups.         Expressions are case sensitive. For example, if you enter I 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       VLAN       Membership         239.1.1.1       ACTIVE       Fa0/1       1       Statue         239.1.1.1       ACTIVE       Fa0/1       1       Statue         239.1.1.2       ACTIVE       Fa0/1       1       Statue         239.1.1.1       ACTIVE<	Syntax Description	ip-address		source po entered, a	orts that all mem	P multicast address. If the address is entered, all receiver and are members of the multicast group appear. If no address is bers of all Multicast VLAN Registration (MVR) groups are bas no members, the group is listed as Inactive.
Include       (Optional) Display includes lines that match the specified expression.         expression       Expression in the output to use as a reference point.         Command Modes       Privileged EXEC         Command History       Release       Modification         12.2(25)EX       This command was introduced.         12.2(25)EX       The scommand was introduced.         12.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, source ports are members of all multicast groups.         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 is an example of output from the show mvr members command:         Switch# show mvr members       Members VLAN       Membership         MVR Group       Status       Members VLAN       Membership         MVR Group       Status       Members VLAN       Membership         The ACTIVE       Fa0/1       1       Status         239,1.1.1       ACTIVE       Fa0/2       2       Status         239,1.1.2       ACTIVE       Fa0/2       2       Status         239,1.1.2       ACTIVE       Fa0/2<		begin				
expression       Expression in the output to use as a reference point.         Command Modes       Privileged EXEC         Command History       Release       Modification         12.2(25)EX       This command was introduced.         12.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, source ports are members of all multicast groups.         Expressions are case sensitive. For example, if you enter I 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       Switch# show mvr members         MVR Group       Statue         239.1.1.1       ACTIVE         ACTIVE       Fa0/1         239.1.1.1       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE         ACTIVE       Fa0/1         239.1.1.2       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE		-		· •	· •	
expression       Expression in the output to use as a reference point.         Command Modes       Privileged EXEC         Command History       Release       Modification         12.2(25)EX       This command was introduced.         12.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, source ports are members of all multicast groups.         Expressions are case sensitive. For example, if you enter I exclude output, the lines that contain output on on appear, but the lines that contain Output appear.         Examples       This is an example of output from the show mvr members command:         Switch# show wvr members       Switch# show wvr members         WK Group       Status         239.1.1.1       ACTIVE         ACTIVE       Fa0/1         239.1.1.1       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE         ACTIVE       Fa0/2         239.1.1.2       ACTIVE		include		(Optiona	l) Displ	ay includes lines that match the specified <i>expression</i> .
Release       Modification         12.2(25)EX       This command was introduced.         12.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines         The show mvr members command applies to receiver and source ports. For MVR-compatible mode, source ports are members of all multicast groups.         Expressions are case sensitive. For example, if you enter I 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       Members VLAN Members/VLAN Membership         239.1.1.1       ACTIVE Fa0/1       1       Static         239.1.1.1       ACTIVE Fa0/2       2       Static         239.1.1.2       ACTIVE Fa0/2       2       Static         239.1.1.2       ACTIVE Fa0/2       2       Static		expression		Expressio	on in th	e output to use as a reference point.
I2.2(25)EX       This command was introduced.         I2.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, source ports are members of all multicast groups.         Expressions are case sensitive. For example, if you enter I 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       Members VLAN         MVR Group       Status       Members VLAN         239.1.1.1       ACTIVE       Fa0/1       1         239.1.1.1       ACTIVE       Fa0/1       2       Statuc         239.1.1.2       ACTIVE       Fa0/2       2       Statuc         239.1.1.2       ACTIVE       Fa0/2       2       Statuc	Command Modes	Privileged E2	XEC			
12.2(35)SE       The VLAN and Membership fields were added to the output display.         Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, 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         Status       Members         VLAN       Membership         239.1.1.1       ACTIVE         ACTIVE       Fa0/1       1         Static       239.1.1.1         ACTIVE       Fa0/2       2         Static       239.1.1.1       ACTIVE         ACTIVE       Fa0/1       1         Static       239.1.1.2       ACTIVE         ACTIVE       Fa0/2       2       Static         239.1.1.2       ACTIVE       Fa0/2       2       Static	Command History	Release		Modifica	tion	
Usage Guidelines       The show mvr members command applies to receiver and source ports. For MVR-compatible mode, 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         Status       Members         VLAN       Membership         239.1.1.1       ACTIVE         ACTIVE       Fa0/1         239.1.1.1       ACTIVE         Static       239.1.1.1         ACTIVE       Fa0/2         Static       239.1.1.1         ACTIVE       Fa0/1         Static       239.1.1.1         ACTIVE       Fa0/2         Static       239.1.1.1         ACTIVE       Fa0/2         Static       239.1.1.2         ACTIVE       Fa0/2         Static       239.1.1.2		12.2(25)EX		This com	mand w	vas introduced.
Source ports are members of all multicast groups.         Expressions are case sensitive. For example, if you enter   exclude output, the lines that contain output on the appear.         Examples         This is an example of output from the show mvr members command:         Switch# show mvr members         MVR Group       Status         MVR Group       Status         MVR Group       Status         MVR Fall       1         Suitch# show mvr members         239.1.1.1       ACTIVE         Fall       1         Static         239.1.1.2       ACTIVE         Fall       1         Static         239.1.1.2       ACTIVE         Fall       1         Static         239.1.1.2         ACTIVE       Fall         Static         239.1.1.2         ACTIVE       Fall         Static		12.2(35)SE		The VLA	N and	Membership fields were added to the output display.
Switch# show mvr membersMVR GroupStatusMembersVLANMembership239.1.1.1ACTIVEFa0/11Static239.1.1.1ACTIVEFa0/22Static239.1.1.1ACTIVEFa0/22Static239.1.1.1ACTIVEFa0/23000Static239.1.1.2ACTIVEFa0/11Static239.1.1.2ACTIVEFa0/22Static	osage duidennes	source ports Expressions	are member are case sen	s of all mu sitive. For	lticast g exampl	groups. e, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i>
MVR Group       Status       Members       VLAN       Membership         239.1.1.1       ACTIVE       Fa0/1       1       Static         239.1.1.1       ACTIVE       Fa0/1       2000       Static         239.1.1.1       ACTIVE       Fa0/2       2       Static         239.1.1.1       ACTIVE       Fa0/2       2       Static         239.1.1.1       ACTIVE       Fa0/2       3000       Static         239.1.1.2       ACTIVE       Fa0/1       1       Static         239.1.1.2       ACTIVE       Fa0/2       2       Static	Examples	This is an ex	ample of ou	tput from t	he show	w mvr members command:
239.1.1.1       ACTIVE       Fa0/1       1       Static         239.1.1.1       ACTIVE       Fa0/1       2000       Static         239.1.1.1       ACTIVE       Fa0/2       2       Static         239.1.1.1       ACTIVE       Fa0/2       3000       Static         239.1.1.1       ACTIVE       Fa0/2       3000       Static         239.1.1.2       ACTIVE       Fa0/1       1       Static         239.1.1.2       ACTIVE       Fa0/2       2       Static		MVR Group	Status	Members		-
239.1.1.1       ACTIVE       Fa0/2       2       Static         239.1.1.1       ACTIVE       Fa0/2       3000       Static         239.1.1.2       ACTIVE       Fa0/1       1       Static         239.1.1.2       ACTIVE       Fa0/2       2       Static						
239.1.1.1       ACTIVE       Fa0/2       3000       Static         239.1.1.2       ACTIVE       Fa0/1       1       Static         239.1.1.2       ACTIVE       Fa0/2       2       Static				Fa0/1	2000	Static
239.1.1.2 ACTIVE Fa0/1 1 Static 239.1.1.2 ACTIVE Fa0/2 2 Static		239.1.1.1	ACTIVE			
239.1.1.2 ACTIVE Fa0/2 2 Static		239.1.1.1	ACTIVE	Fa0/2		Static
<output truncated=""></output>		239.1.1.1 239.1.1.1	ACTIVE ACTIVE	Fa0/2 Fa0/2	3000	Static Static
		239.1.1.1 239.1.1.1 239.1.1.2	ACTIVE ACTIVE ACTIVE	Fa0/2 Fa0/2 Fa0/1	3000 1	Static Static Static
		239.1.1.1 239.1.1.1 239.1.1.2 239.1.1.2	ACTIVE ACTIVE ACTIVE ACTIVE	Fa0/2 Fa0/2 Fa0/1	3000 1	Static Static Static

This is an example of output from the **show mvr members 239.255.0.2** command. It shows how to view the members of the IP multicast group 239.255.0.2:

Switch# show mvr members 239.255.0.2 239.255.0.2 ACTIVE Gi0/1(d), Gi0/2(d), Gi0/3(d), Gi0/4(d), Gi0/5(s)

### **Related Commands**

Command	Description
mvr (global configuration)	Enables and configures multicast VLAN registration on the switch.
mvr (interface configuration)	Configures MVR ports.
show mvr	Displays the global MVR configuration on the switch.
show mvr interface	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]]

۵, Note

PAgP is available only on network node interfaces (NNIs) or enhanced network interfaces (ENIs).

Syntax Description	channel-group-number	(Optional) Number of the channel group. The range is 1 to 48.			
	counters	Display traffic information.			
	internal	Display internal information.			
	neighbor	Display neighbor information.			
	begin	(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> .				
	include	(Optional) Display includes lines that match the specified <i>expression</i> .			
	expression	Expression in the output to use as a reference point.			
Command Modes	User EXEC				
Commond Illiotom	Deleges	Modification			
Command History	Release				
	12.2(25)EX	This command was introduced.			
Usage Guidelines	•	<b>pagp</b> command to display the active channel-group information. To display the nter the <b>show pagp</b> command with a channel-group number.			
	-	sitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> nes that contain <i>Output</i> are appear.			
Examples	do not appear, but the lin	nes that contain <i>Output</i> are appear.			
Examples	do not appear, but the lin	thes that contain <i>Output</i> are appear.			
Examples	do not appear, but the lin This is an example of ou Switch> <b>show pagp 1 co</b> Informati	nes that contain <i>Output</i> are appear. Atput from the <b>show pagp 1 counters</b> command: <b>Dunters</b> ion Flush			
Examples	do not appear, but the lin This is an example of ou Switch> <b>show pagp 1 co</b> Informati Port Sent Re	nes that contain <i>Output</i> are appear. Atput from the <b>show pagp 1 counters</b> command: <b>Sounters</b>			
Examples	do not appear, but the lin This is an example of ou Switch> <b>show pagp 1 co</b> Informati Port Sent Re	hes that contain <i>Output</i> are appear. Atput from the <b>show pagp 1 counters</b> command: <b>Dunters</b> ion Flush ecv Sent Recv			

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

Switch>	sho	w pagp	1 inter	nal					
Flags:	s -	Devic	e is sen	ding Slo	w hello.	C - Dev	ice is in	Consisten	state.
	Α -	Devic	e is in .	Auto mod	e.				
Timers:	Н –	Hello	timer i	s runnin	g.	Q - Qui	t timer is	running.	
	S -	Switc	hing tim	er is ru	nning.	I - Inte	erface tim	er is run	ning.
Channel	gro	up 1							
					Hello	Partner	PAgP	Learning	Group
Port		Flags	State	Timers	Interval	Count	Priority	Method	Ifindex
Gi0/1		SC	U6/S7	Н	30s	1	128	Any	16
Gi0/2		SC	U6/S7	Н	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 Partner Partner Partner Partner Group Partner Partner Device ID Port Port Name Age Flags Cap. 0002.4b29.4600 Gi0/1 Gi0/1 switch-p2 9s SC 10001 0002.4b29.4600 Gi0/2 24s SC 10001 Gi0/2 switch-p2

<b>Related Commands</b>	Command	Description
	clear pagp	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.

Syntax Description	brief	(Optional) Display the name of each macro.
	<b>description</b> [ <b>interface</b> <i>interface-id</i> ]	(Optional) Display all macro descriptions or the description of a specific interface.
	name macro-name	(Optional) Display information about a single macro identified by the macro name.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
ommand Modes	User EXEC	
ommand History	Release	Modification
	12.2(25)EX Expressions are case sen	This command was introduced. asitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i>
Jsage Guidelines	12.2(25)EX Expressions are case sen do not appear, but the lir	This command was introduced. asitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> hes that contain <i>Output</i> appear.
Command History Usage Guidelines Examples	12.2(25)EX Expressions are case sen do not appear, but the lir	This command was introduced. asitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i>
Usage Guidelines	12.2(25)EX Expressions are case sen do not appear, but the lin This is a partial output en Switch# <b>show parser ma</b> Total number of macros	This command was introduced. asitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> hes that contain <i>Output</i> appear. Example from the <b>show parser macro</b> command: acro s = 2
Usage Guidelines	12.2(25)EX Expressions are case sen do not appear, but the lin This is a partial output en Switch# show parser ma Total number of macros Macro name : sample-ma Macro type : customiza duplex full speed auto mdix auto	This command was introduced. Asitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> hes that contain <i>Output</i> appear. Example from the <b>show parser macro</b> command: acro s = 2 acro1

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

```
Switch# show parser macro name sample-macro1
Macro name : sample-macro1
Macro type : customizable
duplex full
speed auto
mdix auto
```

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

Switch#	show	parser	mac	ro	brief
cust	comiza	able	:	sar	mple-macrol
cust	comiza	able	:	tes	st1

<b>Related Commands</b>	Command	Description
	macro apply	Applies a macro on an interface or applies and traces a macro on an interface.
	macro description	Adds a description about the macros that are applied to an interface.
	macro global	Applies a macro on a switch or applies and traces a macro on a switch.
	macro global description	Adds a description about the macros that are applied to the switch.
	macro name	Creates a macro.
	show running-config	Displays the operating configuration. For syntax information, use this link to the Cisco IOS Release 12.2 Command Reference listing page: http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/prod_command_ reference_list.html Select the Cisco IOS Commands Master List, Release 12.2 to navigate to the command.

# show policer aggregate

Use the **show policer aggregate** user EXEC command to display quality of service (QoS) aggregate policer information for all aggregate policers or a specific policer.

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

Syntax Description	aggregate-policer- name	(Optional) The	name of the aggregate policer.
	begin	(Optional) Disp	lay begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Disp	lay excludes lines that match the <i>expression</i> .
	include	(Optional) Disp	lay includes lines that match the specified expression.
	expression	Expression in th	e output to use as a reference point.
Command Modes	User EXEC		
Command History	Release	Modificatio	)n
	12.2(25)EX	This comm	and was introduced.
Examples	This is an example	of output from the	e show policer aggregate command:
	Switch> <b>show poli</b> aggregate-policer		y-policer
	conform-ac	2000000 bc 5000 tion transmit ion set-cos-tran	nsmit cos table 67577
	In use by policym	ap: pin	
Related Commands	Command		Description
	police aggregate (j configuration)	policy-map class	Applies an aggregate policer to multiple classes in the same policy map.
	policer aggregate configuration)	(global	Creates an aggregate policer to police all traffic received on an interface.

### show policer cpu uni-eni

Use the **show policer cpu uni-eni** user EXEC command to display control-plane policer information for the user network interfaces (UNIs) and enhanced network interfaces (ENIs) on the switch, including frames dropped or the configured threshold rate for the control-plane security feature on the switch.

show policer cpu uni-eni [drop [policer-number] | rate] [interface interface-id] [ | {begin |
 exclude | include} expression]

Syntax Description	drop	(Optional) Display control-plane frame-drop count for the specified policer number or for all control-plane policers (0 to 26).
	policer number	(Optional) Display drop statistics for a specific user network interface (UNI) or enhanced network interface (ENI) policer number. The range is from 0 to 26.
	rate	(Optional) Display the configured threshold rate for CPU policers.
	<b>interface</b> <i>interface-id</i>	Optional) Display the control-plane information for the specified physical interface.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.

### **Command Modes** User EXEC

Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	12.2(25)SEG1	Outputs for the show policer cup uni drop changed.
	12.2(44)SE	The <b>show policer cpu uni</b> command was changed to the <b>show policer cpu uni-eni</b> command.

### Usage Guidelines

This command displays policer information that applies to UNIs and ENIs on the switch. Rate-limiting and policers are the same on both port types, except on ENIs on which a Layer 2 control protocol (CDP, STP, LLDP, LACP, or PAgP) has been enabled.

The **show policer cpu uni-eni drop** privileged EXEC command displays the number of accepted and dropped frames for all policers on the switch or for the specified policer number.

The **show policer cpu uni-eni rate** command displays the CPU protection rate-limit threshold on the switch that was configured by entering the **policer cpu uni** *rate* global configuration command or the default rate of 16000 bits per second (bps).

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 policer cpu uni-eni drop** command. Note that CPU protection only uses policers 0 to 26.

### Switch# show policer cpu uni-eni drop

Port	In	Dropped
Name	Frames	Frames
Fa0/1	300	0
Fa0/2	0	0
Fa0/3	0	0
Fa0/4	0	0
Fa0/5	200	0
Fa0/6	0	0
Fa0/7	0	0
Fa0/8	0	0
Fa0/9	508055	325086
Fa0/10	0	0
Fa0/11	0	0
Fa0/12	0	0
Fa0/13	0	0
Fa0/14	0	0
Fa0/15	0	0
Fa0/16	0	0
Fa0/17	0	0
Fa0/18	0	0
Fa0/19	0	0
Fa0/20	0	0
Fa0/21	0	0
Fa0/22	0	0
Fa0/23	0	0
Fa0/24	0	0
Gi0/1	0	0
Gi0/2	0	0
drop-all	0	1849645

This is an example of the new output format for the **show policer cpu uni-eni drop interface** command:

 ${\tt Switch}\#$  show policer cpu uni-eni drop interface gigabitethernet 0/1

```
Policer assigned for Gi0/2

Protocols using this policer:

"VTP" "CISCO_L2" "KEEPALIVE" "SWITCH_IGMP" "SWITCH_L2PT"

Policer rate: 160000 bps

In frames: 48014

Drop frames: 28630
```

This is an example of output from the **show policer cpu uni-eni rate** command when the default rate is used.

```
Switch> show policer cpu uni-eni rate
CPU UNI/ENI port police rate = 160000 bps
```

Related	Commands	
---------	----------	--

s	Command	Description
	policer cpu uni	Configures a CPU policer threshold rate for the switch.
	show platform policer cpu	Displays allocated policer indexes and the corresponding features for all ports or the specified port.

# 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 and outgoing traffic and the actions to be performed on the classified traffic.

show policy-map [policy-map-name | interface [interface-id] [input | output] [class class-name]]
{begin | exclude | include} expression]

Syntax Description	policy-map-name	(Optional) Display the specified policy-map name.			
	class class-map-name	(Optional) Display QoS policy actions for an individual class.			
	interface [interface-id] [input   output]	(Optional) Display information and statistics about policy maps applied to all ports or the specified port. If you specify a port, you can specify additional keywords. The keywords have these meanings:			
		• <i>interface-id</i> —Display information about policy maps on the specified physical interface.			
		• <b>input</b> —Display information about input policy maps on the switch or applied to the specified port.			
		• <b>output</b> —Display the information about output policy-maps on the switch or applied to the specified port.			
	class class-name	(Optional) Display policy-map statistics for an individual class.			
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .			
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .			
	include	(Optional) Display includes lines that match the specified <i>expression</i> .			
<u></u>	expression	Expression in the output to use as a reference point.			
	User EXEC				
	User EXEC Release	Expression in the output to use as a reference point.  Modification This command was introduced.			
Command History	User EXEC          Release         12.2(25)EX         Expressions are case sensitivity	Modification			
Command History	User EXEC          Release         12.2(25)EX         Expressions are case sensido not appear, but the line         This is an example of output	Modification This command was introduced. itive. For example, if you enter   exclude output, the lines that contain <i>output</i> as that contain <i>Output</i> appear. put from the show policy-map command:			
Command Modes Command History Usage Guidelines Examples	User EXEC Release 12.2(25)EX Expressions are case sensi do not appear, but the line	Modification         This command was introduced.         itive. For example, if you enter   exclude output, the lines that contain output es that contain Output appear.         put from the show policy-map command:         policy2         p-10-10-10			

This is an example of output from the **show policy-map** command for a specific policy map:

```
Switch> show policy-map top2
Policy Map top2
Class class-default
shape average 11111124
service-policy pout
```

This is an example of output from the **show policy-map** command for an output policy map:

```
Switch> show policy-map pout
  Policy Map pout
   Class ip1
     priority
     police cir percent 10
      conform-action transmit
      exceed-action drop
      queue-limit 250
      queue-limit precedence 1 100
   Class ip2
      Average Rate Traffic Shaping
      cir 5%
    Class ip3
      bandwidth percent 10
      queue-limit 200
      queue-limit precedence 3 100
```

This is an example of output from the **show policy-map** command for an input policy map:

```
Switch> show policy-map pin-police
Policy Map pin-police
Class ip1
police cir 20000000 bc 625000
conform-action transmit
exceed-action drop
```

This is an example of output from the **show policy-map interface** command for an interface with a two-level output policy map applied:

```
Switch> show policy-map interface fastethernet0/3
FastEthernet0/3
  Service-policy output: top2
   Class-map: class-default (match-any)
     209871 packets
     Match: any
       56 packets
     Traffic Shaping
       Average Rate Traffic Shaping
       CIR 11111124 (bps)
      Output Queue:
       Tail Packets Drop: 195421
      Service-policy : pout
       Class-map: ip1 (match-all)
          9309 packets
         Match: ip precedence 1
         Priority
    police cir 20000000 bc 625000
       conform-action transmit
       exceed-action drop
      conform: 4916 (packets) exceed: 4393 (packets)
```

```
Queue Limit
   queue-limit 250 (packets)
   queue-limit precedence 1 100 (packets)
  Output Queue:
   Max Tail Drop Threshold: 250
   Tail Packets Drop: 4393
Class-map: ip2 (match-all)
  0 packets
 Match: ip precedence 2
 Traffic Shaping
   Average Rate Traffic Shaping
   CIR 5%
                 555555 (bps)
  Output Queue:
   Max Tail Drop Threshold: 48
   Tail Packets Drop: 0
Class-map: ip3 (match-all)
  0 packets
  Match: ip precedence 3
 Bandwidth percent 10
                               1111110 (bps)
  Oueue Limit
   queue-limit 200 (packets)
   queue-limit precedence 3 100 (packets)
  Output Queue:
   Max Tail Drop Threshold: 200
   Tail Packets Drop: 0
Class-map: class-default (match-any)
  200562 packets
 Match: any
   56 packets
  Output Queue:
   Tail Packets Drop: 191028
```

This is an example of output from the **show policy-map interface** command for an interface with an input policy applied:

```
Switch> show policy-map interface gigabitethernet0/1
GigabitEthernet0/1
 Service-policy input: pin-police
   Class-map: ip1 (match-all)
     0 packets
     5 minute offered rate 0 bps, drop rate 0 bps
     Match: ip precedence 1
    police cir 20000000 bc 625000
      conform-action transmit
      exceed-action drop
     conform: 27927 (packets) exceed: 272073 (packets)
   Class-map: class-default (match-any)
     0 packets, 0 bytes
     5 minute offered rate 0 bps, drop rate 0 bps
     Match: any
       0 packets
       5 minute rate 0 bps
```

Table 2-16 describes the fields in the **show policy-map interface** display. The fields in the table are grouped according to the relevant QoS feature.

Field	Description	
Fields associated with	classes or service policies	
Service-policy input/output	Name of the input or output service policy applied to the specified interface	
Class-map	Class of traffic shown. Output appears for each configured class in the policy. The choice for implementing class matches (match-all or match-any) might also appear next to the traffic class.	
packets	Number of packets identified as belonging to the traffic class.	
Match	Match criteria specified for the class of traffic. This includes criteria such as class of service (CoS) value, IP precedence value, Differentiated Services Code Point (DSCP) value, access groups, and QoS groups.	
Fields associated with	policing	
police	Shown when the <b>police</b> command has been configured to enable traffic policing. Displays the specified committed information rate (CIR) and conform burst size (BC) used for policing packets.	
conform-action	Displays the action to be taken on packets marked as conforming to a specified rate.	
conform	Displays the number of packets marked as conforming to the specified rate.	
exceed-action	Displays the actions to be taken on packets marked as exceeding a sperate.	
exceed	Displays the number of packets marked as exceeding the specified rate.	
Fields associated with	queuing	
Queue Limit	Queue size configured for the class in number of packets.	
Output Queue	The queue created for this class of traffic.	
Tail packets dropped	The number of packets dropped when the mean queue depth is greater than the maximum threshold value.	
Fields associated with	traffic scheduling	
Traffic shaping	The rate used for shaping traffic.	
Bandwidth	Bandwidth configured for this class in kbps or a percentage.	
Priority	Indicates that this class is configured for priority queuing.	
Command	Description	
nolicy-man	Creates or modifies a policy map that can be attached to multiple ports to	

 Table 2-16
 show policy-map interface Field Descriptions

### **Related Commands**

Command	Description
policy-map	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]

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

### Command Modes Privileged EXEC

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

Usage Guidelines

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

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

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

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

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

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

Г

### Examples

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

Switch# show port-security

Secure Port	MaxSecureAddr (Count)		SecurityViolation (Count)	Security Action
Gi0/1	1	0	0 \$	Shutdown
Total Addresses	in System (excl	uding one mac	per port) : 1	

Max Addresses limit in System (excluding one mac per port) : 6272

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

Switch# show port-security interface gigabitethernet0/1

```
Port Security : Enabled
Port status : SecureUp
Violation mode : Shutdown
Maximum MAC Addresses : 1
Total MAC Addresses : 0
Configured MAC Addresses : 0
Aging time : 0 mins
Aging type : Absolute
SecureStatic address aging : Disabled
Security Violation count : 0
```

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

#### Switch# show port-security address

Secure Mac Address Table

Vlan	Mac Address	Туре	Ports	Remaining Age (mins)
1	0006.0700.0800	SecureConfigured	Gi0/2	1
				1

Total Addresses in System (excluding one mac per port) : 1 Max Addresses limit in System (excluding one mac per port) : 6272

This is an example of output from the **show port-security interface gigabitethernet0/2 address** command:

Switch# show port-security interface gigabitethernet0/2 address Secure Mac Address Table

Vlan	Mac Address	Туре	Ports	Remaining Age (mins)
1	0006.0700.0800	SecureConfigured	Gi0/2	1
Total	Addresses: 1			

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

```
Switch# show port-security interface gigabitethernet0/2 vlan
Default maximum:not set, using 5120
VLAN Maximum Current
5 default 1
```

0	aoraaro	-
10	default	54
11	default	101
12	default	101
13	default	201
14	default	501

Related Commands	Command	Description
	clear port-security	Deletes from the MAC address table a specific type of secure address or all the secure addresses on the switch or an interface.
	switchport port-security	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 port-type

Use the **show port-type** privileged EXEC command to display interface type information for the Cisco ME switch.

show port-type [eni | nni | uni] [ | {begin | exclude | include} expression]

Syntax Description	eni	Enhanced network interface.				
	nni	Network node interface.				
	uni	User network interface.				
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .				
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .				
	include	(Optional) Display includes lines that match the specified <i>expression</i> .				
	expression	Expression in the output to use as a reference point.				
Command Modes	Privileged EXEC					
Command History	Release	Modification				
-	12.2(25)EX	This command was introduced.				
	12.2(44)SE	The <b>eni</b> keyword was added.				
Usage Guidelines	If you enter the co	ommand without keywords, the output includes the interface type information for all th. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for				
Usage Guidelines	If you enter the corports on the switch the specified port Expressions are c	ommand without keywords, the output includes the interface type information for all th. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for				
Usage Guidelines Examples	If you enter the coports on the switch the specified port Expressions are c do not appear, but This is an exampl Switch# <b>show po</b>	ommand without keywords, the output includes the interface type information for all ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b>				
-	If you enter the corports on the switch the specified port Expressions are c do not appear, but This is an example	ommand without keywords, the output includes the interface type information for all ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords:				
-	If you enter the comports on the switch the specified port Expressions are comported to not appear, but This is an example Switch# show port Port Name	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>outpu</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: rt-type 				
	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an exampl Switch# <b>show po</b> Port Name Fa0/1 Fa0/2	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an example Switch# show port Name Fa0/1 Fa0/2 Fa0/3	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an example Switch# show por Port Name Fa0/1 Fa0/2 Fa0/3 Fa0/4	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni) 1 User Network Interface (uni) 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an example Switch# show port Name Fa0/1 Fa0/2 Fa0/3	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni) 1 User Network Interface (uni)				
-	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an exampl Switch# show por Port Name Fa0/1 Fa0/2 Fa0/3 Fa0/4 Fa0/5	ommand without keywords, the output includes the interface type information for al th. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch specified port Expressions are comported to not appear, but This is an example Switch# show port Port Name Fa0/1 Fa0/2 Fa0/3 Fa0/4 Fa0/5 Fa0/6	ommand without keywords, the output includes the interface type information for al th. If you specify the port type ( <b>eni, nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch specified port Expressions are comported to not appear, but This is an example Switch# show port Port Name Fa0/1 Fa0/2 Fa0/3 Fa0/4 Fa0/5 Fa0/6 Fa0/7	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch the specified port Expressions are comport do not appear, but This is an example Switch# show port Port Name Fa0/1 Fa0/2 Fa0/3 Fa0/4 Fa0/5 Fa0/6 Fa0/7 Fa0/8	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an example Switch# show port Port Name Fa0/1 Fa0/2 Fa0/3 Fa0/4 Fa0/5 Fa0/6 Fa0/7 Fa0/8 Fa0/9	ommand without keywords, the output includes the interface type information for al ch. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. le of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				
	If you enter the comports on the switch the specified port Expressions are c do not appear, but This is an example Switch# show port Port Name 	ommand without keywords, the output includes the interface type information for al th. If you specify the port type ( <b>eni</b> , <b>nni</b> , or <b>uni</b> ), the output includes information for type. ase sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> t the lines that contain <i>Output</i> appear. He of output from the <b>show port-type</b> command with no keywords: <b>rt-type</b> Vlan Port Type 1 User Network Interface (uni) 1 User Network Interface (uni)				

Fa0/14	1	User	Network	Interface	(uni)
Fa0/15	1	User	Network	Interface	(uni)
Fa0/16	1	User	Network	Interface	(uni)
Fa0/17	routed	User	Network	Interface	(uni)
Fa0/18	1	User	Network	Interface	(uni)
Fa0/19	1	User	Network	Interface	(uni)
Fa0/20	1	User	Network	Interface	(uni)
Fa0/21	1	User	Network	Interface	(uni)
Fa0/22	1	User	Network	Interface	(uni)
Fa0/23	10	User	Network	Interface	(uni)
Fa0/24	10	User	Network	Interface	(uni)
Gi0/1	1	Netwo	rk Node	Interface	(nni)
Gi0/2	1	Netwo	rk Node	Interface	(nni)

This is an example of output from the **show port-type** command using keywords:

Switch#	show port-type nni	exclude G	igabitethernet0/1
Port	Name	Vlan	Port Type
Gi0/2		1	Network Node Interface (nni)

<b>Related Commands</b>	Command	Description	
	port-type	Changes the interface type for a specific port.	

# show rep topology

Use the **show rep topology** User EXEC command to display Resilient Ethernet Protocol (REP) topology information for a segment or for all segments, including the primary and secondary edge ports in the segment.

show rep topology [segment segment\_id] [archive] [detail] [ | {begin | exclude | include}
expression]

Syntax Description	segment-id	(Optional) Display REP topology information for the specified segment. The ID range is from 1 to 1024.
	archive	(Optional) Display the previous topology of the segment. This keyword can be useful for troubleshooting a link failure.
	detail	(Optional) Display detailed REP topology information.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.

### **Command Modes** User EXEC

Command History	Release	Modification
	12.2(40)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 a sample output from the **show rep topology segment** privileged EXEC command:

Switch # <b>show rep</b>	topology	segmer	nt 1
REP Segment 1			
BridgeName	PortName	Edge	Role
sw1_multseg_3750	Gi1/1/1	Pri	Alt
sw3_multseg_3400	Gi0/13		Open
sw3_multseg_3400	Gi0/14		Alt
sw4_multseg_3400	Gi0/13		Open
sw4_multseg_3400	Gi0/14		Open
sw5_multseg_3400	Gi0/13		Open
sw5_multseg_3400	Gi0/14		Open
sw2_multseg_3750	Gi1/1/2		Open
sw2_multseg_3750	Gi1/1/1		Open
sw1_multseg_3750	Gi1/1/2	Sec	Open

This example shows output from the **show rep topology detail** command:

```
Switch# show rep topology detail
REP Segment 2
repc_2_24ts, Fa0/2 (Primary Edge)
 Alternate Port, some vlans blocked
 Bridge MAC: 0019.e714.5380
 Port Number: 004
 Port Priority: 080
 Neighbor Number: 1 / [-10]
repc_3_12cs, Gi0/1 (Intermediate)
  Open Port, all vlans forwarding
  Bridge MAC: 001a.a292.3580
  Port Number: 001
  Port Priority: 000
 Neighbor Number: 2 / [-9]
repc_3_12cs, Po10 (Intermediate)
 Open Port, all vlans forwarding
  Bridge MAC: 001a.a292.3580
  Port Number: 080
  Port Priority: 000
  Neighbor Number: 3 / [-8]
repc_4_12cs, Po10 (Intermediate)
  Open Port, all vlans forwarding
  Bridge MAC: 001a.a19d.7c80
 Port Number: 080
  Port Priority: 000
  Neighbor Number: 4 / [-7]
repc_4_12cs, Gi0/2 (Intermediate)
 Alternate Port, some vlans blocked
  Bridge MAC: 001a.a19d.7c80
  Port Number: 002
  Port Priority: 040
  Neighbor Number: 5 / [-6]
```

<output truncated>

This example shows output from the show rep topology segment archive command:

Switch# <b>show rep</b>	topology	segment	: 1 archive
REP Segment 1			
BridgeName	PortName	Edge	Role
sw1_multseg_3750	Gi1/1/1	Pri	Open
sw3_multseg_3400	Gi0/13		Open
sw3_multseg_3400	Gi0/14		Open
sw4_multseg_3400	Gi0/13		Open
sw4_multseg_3400	Gi0/14		Open
sw5_multseg_3400	Gi0/13		Open
sw5_multseg_3400	Gi0/14		Open
sw2_multseg_3750	Gi1/1/2		Alt
sw2_multseg_3750	Gi1/1/1		Open
sw1_multseg_3750	Gi1/1/2	Sec	Open

<b>Related Commands</b>	Command	Description
	rep segment	Enables REP on an interface and assigns a segment ID. This command is also used to configure a port as an edge port, a primary edge port, or a preferred port.

### show sdm prefer

Use the **show sdm prefer** privileged EXEC command to display the Switch Database Management (SDM) templates that can be used to allocate system resources for a particular feature, or use the command without a keyword to display the template in use.

show sdm prefer [default | layer-2] [ | {begin | exclude | include} expression]



The **default** keyword is visible only when the metro IP access image is installed on the switch.

Syntax Description	default	(Optional) Display the template that balances system resources among features. This template is only available with the metro IP access image.
	layer-2	(Optional) Display resource allocations for the template that supports Layer 2 features and does not support routing.
	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	Medification
Command Modes	Privileged EXEC <b>Release</b>	Modification This command was introduced.

**Usage Guidelines** When you change the SDM template by using the **sdm prefer** global configuration command, you must reload the switch for the configuration to take effect. If you enter the **show sdm prefer** command before you enter the **reload** privileged EXEC command, the **show sdm prefer** command shows the template currently in use and the template that will become active after a reload.

The numbers displayed for each template represent an approximate maximum number for each feature resource. The actual number might vary, depending on the actual number of other features configured.

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

#### Examples

This is an example of output from the **show sdm prefer** command, displaying the template in use:

8K

1K

```
Switch# show sdm prefer
The current template is ''layer-2'' 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:
number of IPv4 IGMP groups:
number of IPv4 multicast routes:
number of unicast IPv4 routes:
```

number of IPv4 multicast routes:	0
number of unicast IPv4 routes:	0
number of IPv4 policy based routing aces:	0
number of IPv4/MAC qos aces:	512
number of IPv4/MAC security aces:	1K

This is an example of output from the show sdm prefer default command:

```
Switch# show sdm prefer default
"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:
                                                     5ĸ
  number of IPv4 IGMP groups + multicast routes:
                                                     1K
 number of IPv4 unicast routes:
                                                     9 K
   number of directly-connected IPv4 hosts:
                                                     5K
   number of indirect IPv4 routes:
                                                     4K
  number of IPv4 policy based routing aces:
                                                    512
  number of IPv4/MAC qos aces:
                                                    512
  number of IPv4/MAC security aces:
                                                     1K
```

<b>Related Commands</b>	Command	Description
	sdm prefer	Sets the SDM template to maximize resources for Layer 2 functionality or to the default template.

## show spanning-tree

Use the **show spanning-tree** user EXEC command to display spanning-tree state information.

- show spanning-tree [bridge-group | active [detail] | blockedports | bridge | detail [active] |
  inconsistentports | interface interface-id | mst | pathcost method | root | summary [totals] |
  vlan vlan-id] [ | {begin | exclude | include} expression]
- show spanning-tree bridge-group [active [detail] | blockedports | bridge | detail [active] |
  inconsistentports | interface interface-id | root | summary] [| {begin | exclude | include}
  expression]
- show spanning-tree vlan vlan-id [active [detail] | blockedports | bridge | detail [active] |
  inconsistentports | interface interface-id | root | summary] [ | {begin | exclude | include}
  expression]
- show spanning-tree {vlan vlan-id | bridge-group} bridge [address | detail | forward-time | hello-time | id | max-age | priority [system-id] | protocol] [ | {begin | exclude | include} expression]
- show spanning-tree {vlan vlan-id | bridge-group} root [address | cost | detail | forward-time |
  hello-time | id | max-age | port | priority [system-id] [ | {begin | exclude | include}
  expression]
- show spanning-tree interface interface-id [active [detail] | cost | detail [active] | inconsistency |
  portfast | priority | rootcost | state] [ | {begin | exclude | include} expression]

show spanning-tree mst [configuration [digest]] | [instance-id [detail | interface interface-id
 [detail]] [ | {begin | exclude | include} expression]

Syntax Description	bridge-group	(Optional) Specify the bridge group number. The range is 1 to 255.
	active [detail]	(Optional) Display spanning-tree information only on active interfaces (available only in privileged EXEC mode).
	blockedports	(Optional) Display blocked port information (available only in privileged EXEC mode).
	bridge [address   detail   forward-time   hello-time   id   max-age   priority [system-id]   protocol]	(Optional) Display status and configuration of this switch (optional keywords available only in privileged EXEC mode).
	detail [active]	(Optional) Display a detailed summary of interface information ( <b>active</b> keyword available only in privileged EXEC mode).
	inconsistentports	(Optional) Display inconsistent port information (available only in privileged EXEC mode).

interface interface-id [active [detail]   cost   detail [active]   inconsistency   portfast   priority   rootcost   state]	(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 network node interfaces (NNIs), enhanced network interfaces (ENIs), VLANs, and NNI or ENI port channels. The VLAN range is 1 to 4094. The port-channel range is 1 to 48.		
	<b>Note</b> Spanning Tree Protocol (STP) is not supported on user node interfaces (UNIs). If you enter a UNI interface ID, no spanning-tree information is displayed.		
mst [configuration [digest]] [instance-id	(Optional) Display the multiple spanning-tree (MST) region configuration and status (available only in privileged EXEC mode).		
[detail   interface interface-id [detail]]	The keywords have these meanings:		
	• <b>digest</b> —(Optional) Display the MD5 digest included in the current MST configuration identifier (MSTCI). Two separate digests, one for standard and one for prestandard switches, appear (available only in privileged EXEC mode).		
	The terminology was updated for the implementation of the IEEE standard, and the <i>txholdcount</i> field was added.		
	The new master role appears for boundary ports.		
	The word <i>pre-standard</i> or <i>Pre-STD</i> appears when an IEEE standard bridge sends prestandard BPDUs on a port.		
	The word <i>pre-standard</i> ( <i>config</i> ) or <i>Pre-STD-Cf</i> appears when a port has been configured to send prestandard BPDUs and no prestandard BPDU has been received on that port.		
	The word <i>pre-standard (rcvd)</i> or <i>Pre-STD-Rx</i> appears when a prestandard BPDU has been received on a port that has not been configured to send prestandard BPDUs.		
	A <i>dispute</i> flag appears when a designated port receives inferior designated information until the port returns to the forwarding state or ceases to be designated.		
	• <i>instance-id</i> —You can specify a single instance ID, a range of IDs separated by a hyphen, or a series of IDs separated by a comma. The range is 1 to 4094. The display shows the number of currently configured instances.		
	• <b>interface</b> <i>interface-id</i> —(Optional) Valid interfaces include VLANs, physical NNIs and NNI port channels, and physical ENIs and ENI port channels. STP is not supported on UNIs. The VLAN range is 1 to 4094. The port-channel range is 1 to 48.		
	• <b>detail</b> —(Optional) Display detailed information for the instance or interface.		
pathcost method	(Optional) Display the default path cost method (available only in privileged EXEC mode).		
root [address   cost   detail   forward-time   hello-time   id   max-age   port   priority [system-id]]	(Optional) Display root switch status and configuration (all keywords available only in privileged EXEC mode).		

	summary [totals]	(Optional) Display a summary of port states or the total lines of the spanning-tree state section.
	vlan vlan-id [active [detail]   backbonefast   blockedports   bridge [address   detail   forward-time   hello-time   id   max-age   priority [system-id]   protocol]	(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.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release N	Iodification
	12.2(25)EX T	his command was introduced.
	12.2(25)SEG T	he <b>digest</b> keyword was added, and new digest and transmit hold count
	fi	elds appear.
Usage Guidelines	STP is not supported on UN	elds appear. IIs. Valid spanning-tree information is available only for NNIs or ENIs.
Usage Guidelines	STP is not supported on UN If the <i>vlan-id</i> variable is om	elds appear. IIs. Valid spanning-tree information is available only for NNIs or ENIs. itted, the command applies to the spanning-tree instance for all VLANs. ve. For example, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i>
_	STP is not supported on UN If the <i>vlan-id</i> variable is om Expressions are case sensiti do not appear, but the lines	elds appear. IIs. Valid spanning-tree information is available only for NNIs or ENIs. itted, the command applies to the spanning-tree instance for all VLANs. ve. For example, if you enter   <b>exclude output</b> , the lines that contain <i>outpu</i>
Usage Guidelines Examples	STP is not supported on UN If the <i>vlan-id</i> variable is om Expressions are case sensiti do not appear, but the lines This is an example of output Switch# <b>show spanning-tr</b> VLAN0001 Spanning tree enabled Root ID Priority Address Cost Port	elds appear. IIs. Valid spanning-tree information is available only for NNIs or ENIs. itted, the command applies to the spanning-tree instance for all VLANs. ve. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> that contain <i>Output</i> appear. It from the <b>show spanning-tree active</b> command: <b>ee active</b>
-	STP is not supported on UN If the <i>vlan-id</i> variable is om Expressions are case sensiti do not appear, but the lines This is an example of output Switch# <b>show spanning-tr</b> VLAN0001 Spanning tree enabled : Root ID Priority Address Cost Port Hello Time Bridge ID Priority Address Hello Time Aging Time	elds appear. MIs. Valid spanning-tree information is available only for NNIs or ENIs. hitted, the command applies to the spanning-tree instance for all VLANs. ve. For example, if you enter   exclude output, the lines that contain <i>output</i> that contain <i>Output</i> appear. It from the show spanning-tree active command: ee active protocol ieee 32768 0001.42e2.cdd0 3038 24 (GigabitEthernet0/1) 2 sec Max Age 20 sec Forward Delay 15 sec 49153 (priority 49152 sys-id-ext 1) 0003.fd63.9580 2 sec Max Age 20 sec Forward Delay 15 sec
	STP is not supported on UN If the <i>vlan-id</i> variable is om Expressions are case sensiti do not appear, but the lines This is an example of output Switch# <b>show spanning-tr</b> VLAN0001 Spanning tree enabled Root ID Priority Address Cost Port Hello Time Bridge ID Priority Address Hello Time	elds appear. WIs. Valid spanning-tree information is available only for NNIs or ENIs. hitted, the command applies to the spanning-tree instance for all VLANs. ve. For example, if you enter   exclude output, the lines that contain <i>output</i> that contain <i>Output</i> appear. It from the show spanning-tree active command: ee active protocol ieee 32768 0001.42e2.cdd0 3038 24 (GigabitEthernet0/1) 2 sec Max Age 20 sec Forward Delay 15 sec 49153 (priority 49152 sys-id-ext 1) 0003.fd63.9580 2 sec Max Age 20 sec Forward Delay 15 sec

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 (GigabitEthernet0/1), cost of root path is 3038 Topology change flag not set, detected flag not set Number of topology changes 0 last change occurred 1d16h ago Times: hold 1, topology change 35, notification 2 hello 2, max age 20, forward delay 15 Timers: hello 0, topology change 0, notification 0, aging 300 Uplinkfast enabled Port 1 (GigabitEthernet0/1) of VLAN0001 is forwarding Port path cost 3019, Port priority 128, Port Identifier 128.24. Designated root has priority 32768, address 0001.42e2.cdd0 Designated bridge has priority 32768, address 00d0.bbf5.c680

Designated port id is 128.25, designated path cost 19 Timers: message age 2, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default BPDU: sent 0, received 72364 <output truncated>

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

```
      Switch# show spanning-tree interface gigabitethernet0/1

      Vlan
      Role Sts Cost
      Prio.Nbr Type

      VLAN0001
      Root FWD 3019
      128.24
      P2p
```

This is an example of output from the **show spanning-tree summary** command:

```
Switch# show spanning-tree summary
Switch is in pvst mode
Root bridge for: none
EtherChannel misconfiguration guard is enabled
Extended system ID is enabled
                     is disabled by default
Portfast
PortFast BPDU Guard is disabled by default
Portfast BPDU Filter is disabled by default
Loopguard is disabled by default
Pathcost method used is short
                       Blocking Listening Learning Forwarding STP Active
Name

        1
        0
        0
        11

        3
        0
        0
        1

        3
        0
        0
        1

        3
        0
        0
        1

        3
        0
        0
        1

                                                                12
VLAN0001
VLAN0002
                                                                   4
                         3
VLAN0004
                                                                   4
                         3
VLAN0006
                                                                   4
                                             0
VLAN0031
                          3
                                  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.

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 configuration digest command:

```
Switch# show spanning-tree mst configuration

% Switch is not in mst mode

Name []

Revision 0 Instances configured 1

Digest 0xAC36177F50283CD4B83821D8AB26DE62

Pre-std Digest 0xBB3B6C15EF8D089BB55ED10D24DF44DE
```

This is an example of output from the **show spanning-tree mst interface** interface-id command:

```
Switch# show spanning-tree mst interface gigabitethernet0/1

GigabitEthernet0/1 of MST00 is root forwarding

Edge port: no (default) port guard : none (default)

Link type: point-to-point (auto) bpdu filter: disable (default)

Boundary : boundary (STP) bpdu guard : disable (default)

Bpdus sent 5, received 74

Instance role state cost prio vlans mapped

0 root FWD 20000 128 1,12,14-4094
```

This is an example of output from the **show spanning-tree mst 0** command:

```
Switch# show spanning-tree mst 0

###### MST00 vlans mapped: 1-9,21-4094

Bridge address 0002.4b29.7a00 priority 32768 (32768 sysid 0)

Root address 0001.4297.e000 priority 32768 (32768 sysid 0)

port Gi0/1 path cost 200038

IST master *this switch

Operational hello time 2, forward delay 15, max age 20, max hops 20

Configured hello time 2, forward delay 15, max age 20, max hops 20
```

Interfacerole state costprio typeGigabitEthernet0/1root FWD200000128P2P bound(STP)GigabitEthernet0/2desg FWD200000128P2P bound(STP)Port-channel1desg FWD200000128P2P bound(STP)

<b>Related Commands</b>	Command	Description
	clear spanning-tree counters	Clears the spanning-tree counters.
	clear spanning-tree detected-protocols	Restarts the protocol migration process.
	spanning-tree bpdufilter	Prevents an interface from sending or receiving bridge protocol data units (BPDUs).
	spanning-tree bpduguard	Puts an interface in the error-disabled state when it receives a BPDU.
	spanning-tree cost	Sets the path cost for spanning-tree calculations.
	spanning-tree extend system-id	Enables the extended system ID feature.

Command	Description
spanning-tree guard	Enables the root guard or the loop guard feature for all the VLANs associated with the selected interface.
spanning-tree link-type	Overrides the default link-type setting for rapid spanning-tree transitions to the forwarding state.
spanning-tree loopguard default	Prevents alternate or root ports from becoming the designated port because of a failure that leads to a unidirectional link.
spanning-tree mst configuration	Enters multiple spanning-tree (MST) configuration mode through which the MST region configuration occurs.
spanning-tree mst cost	Sets the path cost for MST calculations.
spanning-tree mst forward-time	Sets the forward-delay time for all MST instances.
spanning-tree mst hello-time	Sets the interval between hello BPDUs sent by root switch configuration messages.
spanning-tree mst max-age	Sets the interval between messages that the spanning tree receives from the root switch.
spanning-tree mst max-hops	Sets the number of hops in an MST region before the BPDU is discarded and the information held for an interface is aged.
spanning-tree mst port-priority	Configures an interface priority.
spanning-tree mst priority	Configures the switch priority for the specified spanning-tree instance.
spanning-tree mst root	Configures the MST root switch priority and timers based on the network diameter.
spanning-tree port-priority	Configures an interface priority.
spanning-tree portfast (global configuration)	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.
spanning-tree portfast (interface configuration)	Enables the Port Fast feature on an interface and all its associated VLANs.
spanning-tree vlan	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	interface-id	(Optional) Interface ID for the physical port (including type, module, and port number).
	broadcast	(Optional) Display broadcast storm threshold setting.
	multicast	(Optional) Display multicast storm threshold setting.
	unicast	(Optional) Display unicast storm threshold setting.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.

### Command Modes User EXEC

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

#### **Usage Guidelines** When you enter an *interface-id*, the storm control thresholds appear for the specified interface.

If you do not enter an *interface-id*, settings appear for one traffic type for all ports on the switch.

If you do not enter a traffic type, settings appear for broadcast storm control.

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

### Examples

This is an example of a partial output from the **show storm-control** command when no keywords are entered. Because no traffic-type keyword was entered, the broadcast storm control settings appear.

Switch>	show	storm-control
---------	------	---------------

Interface	Filter State	Upper	Lower	Current
Gi0/1	Forwarding	20 pps	10 pps	5 pps
Gi0/2	Forwarding	50.00%	40.00%	0.00%
<output td="" trun<=""><td>cated&gt;</td><td></td><td></td><td></td></output>	cated>			

This is an example of output from the **show storm-control** command for a specified interface. Because no traffic-type keyword was entered, the broadcast storm control settings appear.

Switch> show	storm-control gigabitethernet 0/1			
Interface	Filter State	Upper	Lower	Current
Gi0/1	Forwarding	20 pps	10 pps	5 pps

Table 2-17 describes the fields in the **show storm-control** display.

### Table 2-17show storm-control Field Descriptions

Field Description		
Interface	Displays the ID of the interface.	
Filter State	Displays the status of the filter:	
	• Blocking—Storm control is enabled, and a storm has occurred.	
	• Forwarding—Storm control is enabled, and no storms have occurred.	
	• Inactive—Storm control is disabled.	
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
storm-control	Sets the broadcast, multicast, or unicast storm control levels for the switch.

## show system mtu

Use the **show system mtu** privileged EXEC command to display the global maximum transmission unit (MTU) or maximum packet size set for the switch.

show system mtu [ | {begin | exclude | include} expression]

Syntax Description	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
	ports; the routing M Expressions are cas	refers to ports operating at 10/100 Mbps; the system jumbo MTU refers to Gigabit MTU is the MTU for routed packets. se sensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> appear.
Examples	This is an example	of output from the <b>show system mtu</b> command:
	Switch# <b>show syst</b> System MTU size : System Jumbo MTU Routing MTU size	is 1500 bytes size is 1500 bytes
Related Commands	Command	Description
	system mtu	Sets the MTU size for the Fast Ethernet or Gigabit Ethernet ports.
	-	

## show table-map

Use the **show table-map** user EXEC command to display quality of service (QoS) table-map information about all configured table maps or the specified table map.

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

Syntax Description		
	table-map-name	(Optional) The name of the table map.
	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Evomploo		af autout from the shore table more assumed.
Examples	This is an example	of output from the <b>show table-map</b> command:
Examples	_	Le-map
Examples	Switch> <b>show tab</b> tandoori_1>show t Table Map abc	Le-map Cable-map
Examples	Switch> <b>show tab</b> tandoori_1>show t Table Map abc default copy Table Map cos2ds from 2 to 16	le-map cable-map
Examples	Switch> show tabl tandoori_1>show tabl Table Map abc default copy Table Map cos2ds from 2 to 16 default copy Table Map cos2co from 2 to 5 from 3 to 6	le-map cable-map

This is an example of output from the **show table-map** command for a specific table map name:

Switch> show table-map tm

Table Map tm from 1 to 62 from 2 to 63 default ignore

# Related Commands Command Description table-map Creates quality of service (QoS) mapping tables, such as CoS to DSCP, and

so on.

## 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	interface-id	$(O, f, \dots, h)$ ID $(f, h)$ is the formula of $h$ and $h$ $(V, h)$ is the formula of $h$ is the formula of $h$ .
	interface ta	(Optional) ID of the interface and port number. Valid interfaces include physical ports and VLANs. The VLAN range is 1 to 4094.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	If you do not enter	an interface-id, administrative and operational UDLD status for all interfaces appear
Usage Guidelines Examples	Expressions are cas do not appear, but t This is an example	se sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> appear. of output from the <b>show udld</b> <i>interface-id</i> command. For this display, UDLD is ds of the link, and UDLD detects that the link is bidirectional. Table 2-18 describes

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).

### Table 2-18show udld Field Descriptions

Related Commands	Command	Description
	udld	Enables aggressive or normal mode in UDLD or sets the configurable message timer time.
	udld port	Enables UDLD on an individual interface or prevents a fiber-optic interface from being enabled by the <b>udld</b> global configuration command.
	udld reset	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		
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	*	se sensitive. For example, if you enter <b>  exclude output</b> , the lines that contain <i>output</i> the lines that contain <i>Output</i> appear.
Examples	This is an example	of output from the <b>show version</b> command:
		sible in the <b>show version</b> output, the <i>configuration register</i> information is not on the switch.
	Switch> show vers Cisco IOS Softwar (20050712:084347) Copyright (c) 198 Compiled Sun 17-3	on the switch.
	supported of Switch> show vers Cisco IOS Softwar (20050712:084347) Copyright (c) 198 Compiled Sun 17-3 ROM: Bootstrap pr BOOTLDR: ME3400 E tandoori_1 uptim System returned t	<pre>sion see, MEAP Software (MEAP-IPSERVICES-M), Experimental Version 12.2 [teresang-meap-bug-fix 109] 36-2005 by Cisco Systems, Inc. Jul-05 13:19 by teresang</pre>
	supported of Switch> show vers Cisco IOS Softwar (20050712:084347) Copyright (c) 198 Compiled Sun 17-3 ROM: Bootstrap pr BOOTLDR: ME3400 E tandoori_1 uptim System returned t System image file	<pre>sion ce, MEAP Software (MEAP-IPSERVICES-M), Experimental Version 12.2   [teresang-meap-bug-fix 109] 36-2005 by Cisco Systems, Inc. Jul-05 13:19 by teresang cogram is C3750 boot loader 30ot Loader (me3400-HBOOT-M), Version 12.2 [mbutts-meap2 103] me is 1 day, 2 hours, 49 minutes to ROM by power-on</pre>

The password-recovery mechanism is enabled.

512K bytes of flash-simulated r	non-volatile configuration memory.
Base ethernet MAC Address	: 00:0B:FC:FF:32:80
Power supply part number	: 341-0149-01
Motherboard serial number	: FHH0848001R
Power supply serial number	: DTH0450000T
System serial number	: FSJC0407862
Top Assembly Part Number	: 800-26552-01
Top Assembly Revision Number	: 05
Hardware Board Revision Number	: 0x01

Swi	tch	Ports	Model	SW Version	SW Image
*	1	26	ME-3440-24T-FA	12.2(20050712:084347)	MEAP-IPSERVICES-M

Configuration register is 0xF

## show vlan

Use the **show vlan** user EXEC command to display the parameters for all configured VLANs or one VLAN (if the VLAN ID or name is specified) on the switch.

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

Syntax Description	access-map	See the show vlan access-map command.
	brief	(Optional) Display one line for each VLAN with the VLAN name, status, and its ports.
	dot1q tag native	(Optional) Display the IEEE 802.1Q native VLAN tagging status. This keyword is supported only when the switch is running the metro IP access or metro access image.
	filter	See the show vlan filter command.
	id vlan-id	(Optional) Display information about a single VLAN identified by VLAN ID number. For <i>vlan-id</i> , the range is 1 to 4094.
	internal usage	(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). You cannot create VLANs with these IDS by using the <b>vlan</b> global configuration command until you remove them from internal use. This keyword is supported only when the switch is running the metro IP access image.
	mtu	(Optional) Display a list of VLANs and the minimum and maximum transmission unit (MTU) sizes configured on ports in the VLAN.
	name vlan-name	(Optional) Display information about a single VLAN identified by VLAN name. The VLAN name is an ASCII string from 1 to 32 characters.
	private-vlan [type]	(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. Enter <b>type</b> (optional) to see only the VLAN ID and the type of private VLAN.
	remote-span	(Optional) Display information about Remote SPAN (RSPAN) VLANs.
	summary	(Optional) Display VLAN summary information.
	uni-vlan [type]	(Optional) Display user network interface-enhanced network interface (UNI-ENI) VLAN information. Enter <b>type</b> (optional) to see only the VLAN ID and type of UNI-ENI VLAN.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified <i>expression</i> .
	expression	Expression in the output to use as a reference point.



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

### Command Modes User EXEC

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

**Usage Guidelines** In the **show vlan mtu** command output, the MTU\_Mismatch column shows whether all the ports in the VLAN have the same MTU. When *yes* appears in this column, it means that the VLAN has ports with different MTUs. 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 a switch virtual interface (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 *normal* type means a VLAN 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 but do not remove 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*.

In the **show vlan uni-vlan type** command output, type is either *community* or *isolated*. User network interfaces (UNIs) or enhanced network interfaced (ENIs) in a UNI-ENI community VLAN can communicate with each other; UNIs or ENIs in a UNI-ENI isolated VLAN cannot communicate. Network node interfaces (NNIs) can communicate with each other and with UNIs or ENIs in UNI-ENI isolated and community 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.

This is an example of output from the show vlan command. Table 2-19 describes the fields in the display.

#### Examples

<u>Note</u>

The switch supports only Ethernet VLANs. You can configure parameters for FDDI and Token Ring VLANs and view the results in the vlan.dat file, but these parameters are not supported or used.

Switch> <b>show vlan</b> Switch#show vlan VLAN Name	Status	Ports
1 default 1002 fddi-default	act/unsup	
1003 token-ring-default 1004 fddinet-default 1005 trnet-default	act/unsup act/unsup act/unsup	

VLAN	Туре	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500 -	-	-	ibm -	0	0VLAN	Name	
Remot	e SPAN	N VLANS								
Prima	ary Sec	condary Ty	pe		Ports					
VLAN	Туре		Ports	5						

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.		
Туре	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 configured private VLANs, including the primary VLAN ID, the secondary VLAN ID, the type of secondary VLAN (community or isolated), and the ports that belong to it.		
VLAN Type/Ports	Displays any configured UNI-ENI VLANs, the type (community or isolated), and the ports that belong to it.		

### Table 2-19show vlan Command Output Fields

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

Switch> show vlan dotlq tag native

dotlq 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	Туре	Ports
10	501	isolated	Gi0/3
10	502	community	Fa0/11
10	503	non-operational3	-
20	25	isolated	Fa0/13, Fa0/20, Fa0/22, Gi0/1,
20	30	community	Fa0/13, Fa0/20, Fa0/21, Gi0/1,
20	35	community	Fa0/13, Fa0/20, Fa0/23, Fa0/33. Gi0/1,
20	55	non-operational	
2000 2	2500	isolated	Fa0/5, Fa0/10, Fa0/15

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 uni-vlan type command:

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 : 0 Number of existing extended VLANs : 0

This is an example of output from the show vlan id command.

Swito VLAN		ow vlan id 2	2		Stat	cus	Роз	rts			
2	VLAN02	200			acti	ive	Gi(	)/1, (	Gi0/2		
VLAN	Туре	SAID	MTU	Parent	RingNo	Bridge	eNo	Stp	BrdgMode	Trans1	Trans2
2	enet	100002	1500	-	-	-		-	-	0	0
Remot	ce SPAN	N 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. 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 FastEthernet0/23 1026 FastEthernet0/24

<b>Related Commands</b>	Command	Description
	private-vlan	Configures a VLAN as a community, isolated, or primary VLAN or associates a primary VLAN with secondary VLANs.
	switchport mode	Configures the VLAN membership mode of a port.
	vlan	Enables VLAN configuration mode where you can configure VLANs 1 to 4094.

# 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	mapname	(Optional) Name of a specific VLAN access map.
	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	-	sensitive. For example, if you enter <b>  exclude output</b> , the lines that contain <i>output</i> e lines that contain <i>Output</i> appear.
	do not appear, but th	e lines that contain <i>Output</i> appear.
Usage Guidelines Examples	do not appear, but th This is an example o Switch# <b>show vlan</b> Vlan access-map "S Match clauses:	e lines that contain <i>Output</i> appear. f output from the <b>show vlan access-map</b> command: access-map
	do not appear, but th This is an example of Switch# show vlan Vlan access-map "S Match clauses: ip address: S Action: forward Command	e lines that contain Output appear. f output from the show vlan access-map command: access-map ecWiz" 10 ecWiz_Fa1_0_3_in_ip Description
Examples	do not appear, but th This is an example o Switch# show vlan Vlan access-map "S Match clauses: ip address: S Action: forward	e lines that contain <i>Output</i> appear. f output from the <b>show vlan access-map</b> command: access-map wecWiz" 10 wecWiz_Fa1_0_3_in_ip
Examples	do not appear, but th This is an example of Switch# show vlan Vlan access-map "S Match clauses: ip address: S Action: forward Command	e lines that contain Output appear. f output from the show vlan access-map command: access-map lecWiz" 10 lecWiz_Fa1_0_3_in_ip Description Displays information about all VLAN filters or about a particular VLAN or

## 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	access-map name	(Optional) Display filtering information for the specified VLAN access map.
	vlan vlan-id	(Optional) Display filtering information for the specified VLAN. The range is 1 to 4094.
	begin	(Optional) Display begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Display excludes lines that match the expression.
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	Privileged EXEC	
Command History	Release	Modification
	12.2(25)EX	This command was introduced.
Usage Guidelines	1	sensitive. For example, if you enter l <b>exclude output</b> , the lines that contain <i>output</i> e lines that contain <i>Output</i> appear.
Examples	This is an example of	output from the show vlan filter command:
	Switch# <b>show vlan f</b> VLAN Map map_1 is f 20-22	
Related Commands	Command	Description
	show vlan access-ma	<ul> <li>Displays information about a particular VLAN access map or for all VLAN access maps.</li> </ul>
	vlan access-map	Creates a VLAN map entry for VLAN packet filtering.
	vlan filter	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.
	begin	(Optional) Display begins with the line that matches the expression.
	exclude	(Optional) Display excludes lines that match the <i>expression</i> .
	include	(Optional) Display includes lines that match the specified expression.
	expression	Expression in the output to use as a reference point.
Command Modes	User EXEC	
Command History	Release	Modification
Usage Guidelines	-	This command was introduced. ensitive. For example, if you enter I <b>exclude output</b> , the lines that contain <i>output</i>
Usage Guidelines	Expressions are case se	
Usage Guidelines Examples	Expressions are case se do not appear, but the l	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i>
	Expressions are case see do not appear, but the l This is an example of o Switch> <b>show vmps st</b> VMPS Client Statisti	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear. output from the <b>show vmps statistics</b> command. <b>catistics</b>
_	Expressions are case set do not appear, but the l This is an example of o Switch> <b>show vmps st</b>	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear. output from the <b>show vmps statistics</b> command. <b>catistics</b>
_	Expressions are case se do not appear, but the l This is an example of o Switch> <b>show vmps st</b> VMPS Client Statisti 	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear. output from the <b>show vmps statistics</b> command. <b>catistics</b> 
	Expressions are case set do not appear, but the l This is an example of of Switch> show vmps st VMPS Client Statisti VQP Queries: VQP Responses: VMPS Changes:	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear. output from the <b>show vmps statistics</b> command. <b>catistics</b> 
	Expressions are case se do not appear, but the l This is an example of o Switch> <b>show vmps st</b> VMPS Client Statisti 	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear. output from the <b>show vmps statistics</b> command. <b>catistics</b> 
	Expressions are case set do not appear, but the l This is an example of of Switch> show vmps st VMPS Client Statisti VQP Queries: VQP Responses: VMPS Changes: VQP Shutdowns:	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear.
	Expressions are case set do not appear, but the l This is an example of of Switch> show vmps st VMPS Client Statisti 	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear.
	Expressions are case set do not appear, but the l This is an example of of Switch> show vmps st VMPS Client Statisti VQP Queries: VQP Queries: VQP Responses: VMPS Changes: VQP Shutdowns: VQP Denied: VQP Wrong Domain: VQP Wrong Version: VQP Insufficient Re	ensitive. For example, if you enter   <b>exclude output</b> , the lines that contain <i>output</i> lines that contain <i>Output</i> appear.

Table 2-20 show vmps statistics Field Descriptions

Field	Description
VQP Queries	Number of queries sent by the client to the VMPS.
VQP Responses	Number of responses sent to the client from the VMPS.
VMPS Changes	Number of times that the VMPS changed from one server to another.

Field	Description
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 VQP 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.

### Table 2-20 show vmps statistics Field Descriptions (continued)

Related Commands	Command	Description
	clear vmps statistics	Clears the statistics maintained by the VQP client.
	vmps reconfirm (privileged EXEC)	Sends VQP queries to reconfirm all dynamic VLAN assignments with the VMPS.
	vmps retry	Configures the per-server retry count for the VQP client.
	vmps server	Configures the primary VMPS and up to three secondary servers.