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

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

The RMON statistics collection command is based on hardware counters. If the port is a user network interface (UNI) or enhanced network interface (ENI), you must use the **no shutdown** interface configuration command to enable it before using the **rmon collection stats** command. UNIs and ENIs are disabled by default. Network node interfaces (NNIs) are enabled by default.

Examples

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

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

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

| Command | Description |
|----------------------|---|
| show rmon statistics | Displays RMON statistics. |
| | For syntax information, select Cisco IOS Configuration Fundamentals Command Reference, Release 12.2 > System Management Commands > RMON Commands. |

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 template provides a balance to all features.



On switches that are running the metro access image, only the layer-2 template is supported.

Command Modes

Global configuration

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

You must reload the switch for the configuration to take effect. If you enter the **show sdm prefer** command before you enter the **reload** privileged EXEC command, the **show sdm prefer** command shows the template currently in use and the template that will become active after a reload.

The default templates balances the use of system resources. Do not use the default template if you do not have routing enabled on your switch. Using the balanced template prevents Layer 2 features from using the memory allocated to unicast routing in the default template.

Do not use the layer-2 template if the switch is routing packets. The layer-2 template does not support routing and forces any routing to be done through software. This overloads the CPU and severely degrades routing performance.

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.

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

| Resource | Layer-2 | Default |
|--|---------|---------|
| Unicast MAC addresses | 8 K | 5 K |
| IPv4 IGMP groups + multicast routes (default only) | _ | 1 K |
| IP v4 IGMP groups (layer-2 only) | 1 K | _ |
| IPv4 multicast routes (layer-2 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 ACEs ¹ | 0 | 0.5 K |
| IPv4 or MAC QoS ² ACEs | 0.5 K | 0.5 K |
| IPv4 or MAC security ACEs | 1 K | 1 K |

^{1.} Access control entries

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
```

This is an example of an output display when you have changed the template to the layer-2 template and have not reloaded the switch:

```
Switch# show sdm prefer
The current template is
```

```
The current template is "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:
                                                     5K
  number of IPv4 IGMP groups + multicast routes:
                                                    1 K
  number of IPv4 unicast routes:
                                                     9K
   number of directly-connected IPv4 hosts:
   number of indirect IPv4 routes:
                                                     4K
  number of IPv4 policy based routing aces:
                                                    0.5K
 number of IPv4/MAC gos aces:
                                                    0.5K
  number of IPv4/MAC security aces:
                                                     1K
On next reload, template will be "layer-2" template.
```

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

| 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. |

^{2.} Quality of service

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 service instances are defined.

Command Modes

Interface configuration

Command History

| Release | Modification | |
|------------|------------------------------|--|
| 12.2(44)EY | This command was introduced. | |

Usage Guidelines

After you enter the **service instance** *id* **ethernet** command, the switch enters Ethernet service configuration mode, and these configuration commands are available:

- **default**: sets the service instance to its default state.
- ethernet lmi ce-vlan map: configures Ethernet Local Management Interface (LMI) parameters. See the ethernet lmi ce-vlan map command.
- exit: exits EVC configuration mode and returns to global configuration mode.
- no: negates a command or returns a command to its default setting.

Examples

This example shows how to define an Ethernet service instance and to enter Ethernet service configuration mode for EVC *test*:

Switch(config-if)# service instance 333 ethernet test
Switch(config-if-srv)#

| 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(44)EY | This command was introduced. |

Usage Guidelines

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



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

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

| Command | Description |
|--------------|---|
| show version | Displays version information for the hardware and firmware. |

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. |



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

Defaults

No policy maps are attached to the port.

Command Modes

Interface configuration

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

Only one input policy map and one output policy map can be attached to an interface.

Beginning with Cisco IOS Release 12.2(35)SE, you can attach an output policy map to each interface on the switch. However, the switch supports a limit of three unique queue-limit configurations across all output policy maps at any time. Multiple policy maps can share the same queue-limit configuration. If you try to attach an output policy map with a fourth unique queue-limit configuration, you see this error message:

QoS: Configuration failed. Maximum number of allowable unique queue-limit configurations exceeded.

You can attach input or output policy maps to a Fast Ethernet or Gigabit Ethernet port. You cannot attach policy maps to switch virtual interfaces (SVIs) and EtherChannel interfaces.

Examples

This example shows how to apply *plcmap1* as an output policy map:

Switch(config)# interface gigabitethernet0/1
Switch(config-if)# service-policy output plcmap1

This example shows how to remove *plcmap2* from the port:

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.

| 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 interface [interface-id] | Displays policy maps configured on the specified interface or on all 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. |

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

Syntax Description

| policy-map-name | Name of the service policy map (created by using the policy-map global |
|-----------------|---|
| | configuration command) to be used in a QoS hierarchical service policy. |

Defaults

No service policies are defined.

Command Modes

Policy-map class configuration

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

You can use the **service-policy input** command to assign a child QoS policy to a parent input policy defined with a classification based on VLAN IDs. This allows you to create a hierarchical policy for per-port, per-VLAN QoS.

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.

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
```



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) # class dscp-23 video
Switch(config-pmap-c) # set cos 4
Switch(config-pmap-c) # set ip precedence 4
Switch(config-pmap-c) # exit

Switch(config-pmap) # class customer-1
Switch(config-pmap) # class customer-1-vlan
Switch(config-pmap-c) # service-policy ingress-policy-1
Switch(config-pmap-c) # exit
```

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

| 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: |
| | • cos—CoS value |
| | • dscp —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 table keyword. Name of the table map used to specify the CoS 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(44)EY | This command was introduced. |

Usage Guidelines

You can configure **set cos** with all other marking actions, specifically **set dscp**, **set precedence**, 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.

Use the **set cos** command if you want to mark a packet that is being sent to a switch. Switches can leverage Layer 2 header 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.

| 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 dscp

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: |
| | • cos—class of service (CoS) value |
| | • dscp —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 table 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(44)EY | This command was introduced. |

Usage Guidelines

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 class.

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.

| 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: |
| | • cos—class of service (CoS) value |
| | • dscp —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 precedence value |
| table-map-name | (Optional) Used in conjunction with the table keyword. Name of the table map used to specify the precedence 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(44)EY | This command was introduced. |

Usage Guidelines

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.

| 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 configuration

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

You can configure **set qos-group** with all other marking actions, specifically **set cos, set dscp**, and **set precedence**, 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.

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

Examples

This example shows how to set all FTP traffic to QoS group 5:

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

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

| 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

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

setup

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

- · IP address and network mask
- Password strategy for your environment

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

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

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

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

Examples

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

```
Switch# setup
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: yes

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

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

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

```
Enter host name [Switch]:host-name
  The enable secret is a password used to protect access to
  privileged EXEC and configuration modes. This password, after
  entered, becomes encrypted in the configuration.
  Enter enable secret: enable-secret-password
  The enable password is used when you do not specify an
  enable secret password, with some older software versions, and
  some boot images.
  Enter enable password: enable-password
  The virtual terminal password is used to protect
  access to the router over a network interface.
  Enter virtual terminal password: terminal-password
  Configure SNMP Network Management? [no]: yes
  Community string [public]:
Current interface summary
Any interface listed with OK? value "NO" does not have a valid configuration
Interface
                           IP-Address
                                           OK? Method Status
                                                                             Protocol
Vlan1
                           172.20.135.202 YES NVRAM up
                                                                             uр
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
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.
[2] Save this configuration to nvram and exit.
Enter your selection [2]:

| 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_command_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 defined.

Command Modes

Policy-map class configuration

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

You use the **shape average** policy-map class command to control output traffic. Shaping is not supported in input policy maps.

Traffic shaping limits the rate of transmission of data. Configuring traffic shaping for a user-defined class or **class-default** for class-based shaping sets the peak information rate (PIR) for that class. Configuring traffic shaping for the class **class-default** when it is the only class in the policy map that is attached to an interface sets the PIR for the interface (port shaping).

You cannot configure **shape average** in a class that includes priority queueing (configured with the **priority** policy-map class configuration command).

The **shape average** command uses a default queue limit for the class. You can change the queue limit by using the **queue-limit** policy-map class command, overriding the default that is set by the **shape average** command.

You cannot use the **bandwidth** policy-map class configuration command to configure class-based weighted fair queuing (CBWFQ) and the **shape average** command to configure traffic shaping for the same class.

You can configure hierarchical policy maps by attaching the **service-policy** policy-map class command to the class **class-default** only when **shape average** is also configured on the class **class-default**.

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 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)# class classout2
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)# shape average 10000000
Switch(config-pmap-c)# exit
Switch(config-pmap)# exit
Switch(config-pmap)# exit
Switch(config-pmap)# sexit
```

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.

| 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. |
| show policy-map interface [interface-id] | 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. |
| ipc | (Optional) Display Interprocess Communication (IPC) protocol access-list configuration download information. |
| begin | (Optional) Display begins with the line that matches the expression. |
| l 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. |
| | |



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

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | 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.

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

Examples

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

```
Switch# show access-lists
Standard IP access list 1
     10 permit 1.1.1.1
     20 permit 2.2.2.2
     30 permit any
     40 permit 0.255.255.255, wildcard bits 12.0.0.0
Standard IP access list videowizard_1-1-1-1
     10 permit 1.1.1.1
```

```
Standard IP access list videowizard_10-10-10-10
10 permit 10.10.10.10
Extended IP access list 121
10 permit ahp host 10.10.10.10 host 20.20.10.10 precedence routine
```

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
                       All frame count: 0
     Drop And Log:
     Drop And Log:
                         All bytes count: 0
     Bridge Only:
                         All frame count: 0
     Bridge Only:
                         All bytes count: 0
    Bridge Only And Log: All frame count: 0
     Bridge Only And Log: All bytes count: 0
     Forwarding To CPU: All frame count: 0
     Forwarding To CPU: All bytes count: 0
    Forwarded:
                       All frame count: 2121
    Forwarded: All bytes count: 180762
Forwarded And Log: All frame count: 0
     Forwarded And Log: All bytes count: 0
 L3 ACL INPUT Statistics
    Drop:
                         All frame count: 0
    Drop:
                        All bytes count: 0
    Drop And Log:
                        All frame count: 0
    Drop And Log:
                        All bytes count: 0
    Bridge Only:
                        All frame count: 0
                        All bytes count: 0
     Bridge Only:
     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
                        All bytes count: 1236182
     Forwarded:
     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
    Drop And Log: All frame count: 0
    Drop And Log:
                       All bytes count: 0
    Bridge Only:
                        All frame count: 0
    Bridge Only:
                        All bytes count: 0
     Bridge Only And Log: All frame count: 0
     Bridge Only And Log: All bytes count: 0
    Forwarding To CPU: All frame count: 0 Forwarding To CPU: All bytes count: 0
     Forwarded:
                         All frame count: 232983
     Forwarded:
                         All bytes count: 16825661
     Forwarded And Log: All frame count: 0
     Forwarded And Log: All bytes count: 0
 L3 ACL OUTPUT Statistics
    Drop:
                        All frame count: 0
                        All bytes count: 0
     Drop:
                        All frame count: 0
     Drop And Log:
     Drop And Log:
                         All bytes count: 0
     Bridge Only:
                         All frame count: 0
     Bridge Only:
                        All bytes count: 0
```

Bridge Only And Log: All frame count: 0

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

| Command | Description |
|--------------------------|--|
| access-list | Configures a standard or extended numbered access list on the switch. For syntax information, select Cisco IOS IP Command Reference, Volume 1 of 3:Addressing and Services, Release 12.2 > IP Services Commands. |
| ip access list | Configures a named IP access list on the switch. For syntax information, select Cisco IOS IP Command Reference, Volume 1 of 3:Addressing and Services, Release 12.2 > IP Services Commands. |
| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

Switch# show archive status
IDLE: No upgrade in progress
Switch# show archive status
LOADING: Upgrade in progress
Switch# show archive status
EXTRACT: Extracting the image
Switch# show archive status

VERIFY: Verifying software

Switch# show archive status

RELOAD: Upgrade completed. Reload pending

| Command | Description |
|---------------|---|
| alarm-contact | 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) Name of the ACL. |
|------------|--|
| 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show arp access-list command:

Switch> show arp access-list

ARP access list rose

permit ip 10.101.1.1 0.0.0.255 mac any
permit ip 20.3.1.0 0.0.0.255 mac any

| Command | Description |
|--|--|
| arp access-list | Defines an ARP ACL. |
| deny (ARP access-list configuration) | Denies an ARP packet based on matches against the Dynamic Host Configuration Protocol (DHCP) bindings. |
| ip arp inspection filter vlan | Permits ARP requests and responses from a host configured with a static IP address. |
| permit (ARP access-list configuration) | 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show boot command. Switch# show boot

5d05h: %SYS-5-CONFIG_I: Configured from console by console

BOOT path-list :

Config file : flash:/config.text

Private Config file : flash:/private-config.text

Enable Break : no
Manual Boot : yes
HELPER path-list : Yes
Auto upgrade : yes

Table 2-5 describes each field in the display.

Table 2-5 show boot Field Descriptions

| Field | Description |
|---------------------|--|
| BOOT path-list | Displays a semicolon separated list of executable files to try to load and execute when automatically booting. |
| | 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. |
| 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. |

| 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 interface on which TDR was run. |
|--------------|--|
| 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(44)EY | This command was introduced. |

Usage Guidelines

TDR is supported only on copper Ethernet 10/100 ports on the Cisco ME switch. It is not supported on small form-factor pluggable (SFP)-module ports. For more information about TDR, see the software configuration guide for this release.

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

Examples

This is an example of output from the **show cable-diagnostics tdr interface** *interface-id* command on a Cisco ME switch:

 ${\tt Switch\#\ show\ cable-diagnostics\ tdr\ interface\ fastethernet0/1}$

TDR test last run on: March 01 18:14:44

| Interface | Speed | Local | pair | Pair | leng | gth | | Remot | e pair | Pair status |
|-----------|-------|-------|-------|------|------|-----|--------|-------|--------|-------------|
| Fa0/1 | 100M | Pair | А | 4 | +/- | 5 | meters | Pair | Α | Normal |
| | | Pair | В | 4 | +/- | 5 | meters | Pair | В | Normal |
| | | Pair | С | N/A | | | | Pair | C | N/A |
| | | Pair | D | N/A | | | | Pair | D | N/A |

Table 2-6 lists the descriptions of the fields in the **show cable-diagnostics tdr** command output.

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

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

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 $\rm fa0/1$

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

% TDR test is not supported on switch 1

| 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 | (Optional) Display the contents of the specified class map. |
|----------------|--|
| begin | (Optional) Display begins with the line that matches the <i>expression</i> . |
| l 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)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show class-map command:

```
Switch> show class-map

Class Map match-all videowizard_10-10-10-10 (id 2)

Match access-group name videowizard_10-10-10-10

Class Map match-any class-default (id 0)

Match any

Class Map match-all dscp5 (id 3)

Match ip dscp 5
```

| Command | Description Creates a class map to be used for matching packets to the class whose name you specify. | | |
|--------------------|---|--|--|
| class-map | | | |
| match access-group | Defines the match criteria to classify traffic. | | |

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 expression. |
|------------|--|
| l exclude | (Optional) Display excludes lines that match the expression. |
| linclude | (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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

| Switch# | show | controllers | cpu-interface |
|---------|------|-------------|---------------|
|---------|------|-------------|---------------|

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

```
Supervisor ASIC receive-queue parameters
_____
queue 0 maxrecevsize 5EE pakhead 1419A20 paktail 13EAED4
queue 1 maxrecevsize 5EE pakhead 15828E0 paktail 157FBFC
queue 2 maxrecevsize 5EE pakhead 1470D40 paktail 1470FE4
 queue 3 maxrecevsize 5EE pakhead 19CDDD0 paktail 19D02C8
<output truncated>
Supervisor ASIC Mic Registers
______
                             80000800
MicDirectPollInfo
MicIndicationsReceived
                             00000000
                             00000000
MicInterruptsReceived
MicPcsInfo
                             0001001F
                             00000000
MicPlbMasterConfiguration
MicRxFifosAvailable
                             00000000
MicRxFifosReady
                             0000BFFF
MicTimeOutPeriod:
                     FrameTOPeriod: 00000EA6 DirectTOPeriod: 00004000
<output truncated>
MicTransmitFifoInfo:
                                     ReadPtr:
Fifo0: StartPtrs:
                      038C2800
                                                    038C2C38
       WritePtrs:
                     038C2C38
                                     Fifo_Flag:
                                                    8A800800
       Weights:
                     001E001E
Fifo1: StartPtr:
                     03A9BC00
                                     ReadPtr:
                                                    03A9BC60
                                     Fifo_Flag:
                                                    89800400
       WritePtrs:
                     03A9BC60
       writeHeaderPtr: 03A9BC60
                   038C88E0
Fifo2: StartPtr:
                                     ReadPtr:
                                                    038C88E0
                                                    88800200
       WritePtrs:
                                     Fifo_Flag:
       writeHeaderPtr: 038C88E0
Fifo3: StartPtr:
                   03C30400
                                     ReadPtr:
                                                    03C30638
       WritePtrs:
                    03C30638
                                     Fifo_Flag:
                                                    89800400
       writeHeaderPtr: 03C30638
Fifo4: StartPtr: 03AD5000
                                     ReadPtr:
                                                    03AD50A0
       WritePtrs:
                      03AD50A0
                                     Fifo_Flag:
                                                    89800400
       writeHeaderPtr: 03AD50A0
Fifo5: StartPtr:
                     03A7A600
                                     ReadPtr:
                                                    03A7A600
                                                    88800200
       WritePtrs:
                     03A7A600
                                     Fifo_Flag:
       writeHeaderPtr: 03A7A600
Fifo6: StartPtr:
                   03BF8400
                                     ReadPtr:
                                                    03BF87F0
       WritePtrs:
                     03BF87F0
                                     Fifo_Flag:
                                                    89800400
```

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. |

<output truncated>

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. | | | |
| l begin | (Optional) Display begins with the line that matches the expression. | | | |
| l 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 (only supported with the interface-id keywords in user EXEC mode)

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

${\tt Switch\#\ show\ controllers\ ethernet-controller\ gigabitethernet0/1}$

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

Table 2-7 Transmit Field Descriptions

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

Table 2-7 Transmit Field Descriptions (continued)

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

^{1.} CFI = Canonical Format Indicator

Table 2-8 Receive Field Descriptions

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

Table 2-8 Receive Field Descriptions (continued)

| Field | Description |
|---------------------------|--|
| Unicast bytes | The total amount of memory (in bytes) used by unicast frames received on an interface, including the FCS value and the incorrectly formed frames. This value excludes the frame header bits. |
| Multicast bytes | The total amount of memory (in bytes) used by multicast frames received on an interface, including the FCS value and the incorrectly formed frames. This value excludes the frame header bits. |
| Broadcast bytes | The total amount of memory (in bytes) used by broadcast frames received on an interface, including the FCS value and the incorrectly formed frames. This value excludes the frame header bits. |
| Alignment errors | The total number of frames received on an interface that have alignment errors. |
| FCS errors | The total number of frames received on an interface that have a valid length (in bytes) but do not have the correct FCS values. |
| Oversize frames | The number of frames received on an interface that are larger than the maximum allowed frame size. |
| Undersize frames | The number of frames received on an interface that are smaller than 64 bytes. |
| Collision fragments | The number of collision fragments received on an interface. |
| Minimum size frames | The total number of frames that are the minimum frame size. |
| 65 to 127 byte frames | The total number of frames that are from 65 to 127 bytes. |
| 128 to 255 byte frames | The total number of frames that are from 128 to 255 bytes. |
| 256 to 511 byte frames | The total number of frames that are from 256 to 511 bytes. |
| 512 to 1023 byte frames | The total number of frames that are from 512 to 1023 bytes. |
| 1024 to 1518 byte frames | The total number of frames that are from 1024 to 1518 bytes. |
| Overrun frames | The total number of overrun frames received on an interface. |
| Pause frames | The number of pause frames received on an interface. |
| Symbol error frames | The number of frames received on an interface that have symbol errors. |
| Invalid frames, too large | The number of frames received that were larger than maximum allowed MTU 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. |

- 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-c | control | ler gi | gabitether | net0/2 | phy |
|-------------------------------------|---------|--------|-------------|--------|-------------------|
| Control Register | : | 0001 0 | 0001 0100 0 | 0000 | |
| Control STATUS | : | 0111 | 1001 0100 | 1001 | |
| Phy ID 1 | : | 0000 | 0001 0100 | 0001 | |
| Phy ID 2 | : | 0000 | 1100 0010 | 0100 | |
| Auto-Negotiation Advertisement | : | 0000 | 0011 1110 | 0001 | |
| Auto-Negotiation Link Partner | : | 0000 | 0000 0000 | 0000 | |
| Auto-Negotiation Expansion Reg | : | 0000 | 0000 0000 | 0100 | |
| Next Page Transmit Register | : | 0010 | 0000 0000 | 0001 | |
| Link Partner Next page Registe | : | 0000 | 0000 0000 | 0000 | |
| 1000BASE-T Control Register | : | 0000 | 1111 0000 | 0000 | |
| 1000BASE-T Status Register | : | 0100 | 0000 0000 | 0000 | |
| Extended Status Register | : | 0011 | 0000 0000 | 0000 | |
| PHY Specific Control Register | : | 0000 | 0000 0111 | 1000 | |
| PHY Specific Status Register | : | 1000 | 0001 0100 | 0000 | |
| Interrupt Enable | : | 0000 | 0000 0000 | 0000 | |
| Interrupt Status | : | 0000 | 0000 0100 | 0000 | |
| Extended PHY Specific Control | : | 0000 | 1100 0110 | 1000 | |
| Receive Error Counter | : | 0000 | 0000 0000 | 0000 | |
| Reserved Register 1 | : | 0000 | 0000 0000 | 0000 | |
| Global Status | : | 0000 | 0000 0000 | 0000 | |
| LED Control | : | 0100 | 0001 0000 | 0000 | |
| Manual LED Override | : | 0000 | 1000 0010 | 1010 | |
| Extended PHY Specific Control | : | 0000 | 0000 0001 | 1010 | |
| Disable Receiver 1 | : | 0000 | 0000 0000 | 1011 | |
| Disable Receiver 2 | : | 1000 | 0000 0000 | 0100 | |
| Extended PHY Specific Status | : | 1000 | 0100 1000 | 0000 | |
| Auto-MDIX | : | On | [AdminStat | ce=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
                                : 00000003
SupervisorReceiveFifoSramInfo : 000007D0 000007D0 40000000 SupervisorTransmitFifoSramInfo : 000001D0 000001D0 40000000
GlobalStatus
                                 : 00000800
IndicationStatus
                                 : 00000000
IndicationStatusMask
                                 : FFFFFFFF
InterruptStatus
                                 : 00000000
InterruptStatusMask
                                  : 01FFE800
```

```
SupervisorDiag
                                   : 00000000
SupervisorFrameSizeLimit
                                   : 000007C8
                                   : 000A0F01
SupervisorBroadcast
General TO
                                  : 000003F9 00000000 00000004
StackPcsInfo
                                  : FFFF1000 860329BD 5555FFFF FFFFFFF
                                    FF0FFF00 86020000 5555FFFF 00000000
                                  : 73001630 00000003 7F001644 00000003
StackRacInfo
                                    24140003 FD632B00 18E418E0 FFFFFFF
StackControlStatus
                                   : 18E418E0
stackControlStatusMask
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 : 000012000
TransmitBufferCommonCountPeak : 0000001E
                                  : 0000001E
TransmitBufferCommonCommonEmpty : 000000FF
NetworkActivity
                                   : 00000000 00000000 00000000 02400000
DroppedStatistics
                                   : 00000000
                                   : 00000001
FrameLengthDeltaSelect
SneakPortFifoInfo
                                   : 00000000
MacInfo
                                   : 0EC0801C 00000001 0EC0801B 00000001
                                     00C0001D 00000001 00C0001E 00000001
```

<output truncated>

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

Switch# show controllers ethernet-controller port-asic statistics ______ PortASIC 0 Statistics ______ 0 RxQ-0, wt-0 enqueue frames 0 RxQ-0, wt-0 drop frames 66 RxQ-0, wt-1 enqueue frames 0 RxQ-0, wt-1 drop frames 4118966 RxQ-0, wt-1 enqueue frames 0 RxQ-0, wt-2 enqueue frames 0 RxQ-0, wt-2 drop frames 0 RxQ-1, wt-0 enqueue frames 0 RxQ-1, wt-0 drop frames 0 RxQ-1, wt-1 drop frames 296 RxQ-1, wt-1 enqueue frames 2836036 RxQ-1, wt-2 enqueue frames 0 RxQ-1, wt-2 drop frames 0 RxQ-2, wt-0 drop frames 0 RxQ-2, wt-0 enqueue frames 0 RxQ-2, wt-1 enqueue frames 0 RxQ-2, wt-1 drop frames 158377 RxQ-2, wt-2 enqueue frames 0 RxQ-2, wt-2 drop frames 0 RxQ-3, wt-0 enqueue frames 0 RxQ-3, wt-0 drop frames 0 RxQ-3, wt-1 enqueue frames 0 RxQ-3, wt-1 drop frames 0 RxQ-3, wt-2 enqueue frames 0 RxQ-3, wt-2 drop frames 15 TxBufferFull Drop Count 0 Rx Fcs Error Frames 0 TxBufferFrameDesc BadCrc16 0 Rx Invalid Oversize Frames O TxBuffer Bandwidth Drop Cou 0 Rx Invalid Too Large Frames 0 Rx Invalid Too Large Frames 0 TxQueue Bandwidth Drop Coun 0 TxQueue Missed Drop Statist 0 Rx Invalid Too Small Frames 0 Rx Too Old Frames 74 RxBuffer Drop DestIndex Cou O SneakQueue Drop Count 0 Tx Too Old Frames O Learning Queue Overflow Fra 0 System Fcs Error Frames 0 Learning Cam Skip Count 0 Sup Queue 8 Drop Frames 15 Sup Queue 0 Drop Frames 0 Sup Queue 1 Drop Frames 0 Sup Queue 9 Drop Frames 0 Sup Queue 10 Drop Frames O Sup Queue 2 Drop Frames

| 0 | Sup Queue | 3 Drop | Frames | (|) Sur | Queue | 11 | Drop | Frames |
|------------|-----------|----------|------------|---|-------|---------|------|--------|--------|
| 0 | Sup Queue | 4 Drop | Frames | (|) Sur | Queue | 12 | Drop | Frames |
| 0 | Sup Queue | 5 Drop | Frames | (|) Sur | Queue | 13 | Drop | Frames |
| 0 | Sup Queue | e 6 Drop | Frames | (|) Sur | Queue | 14 | Drop | Frames |
| 0 | Sup Queue | 7 Drop | Frames | (|) Sur | Queue | 15 | Drop | Frames |
| ======== | | ====== | -======= | | | ====== | === | ===== | ====== |
| PortASIC 1 | Statistic | S | | | | | | | |
| | | | | | | | | | |
| 0 | RxQ-0, wt | -0 enque | eue frames | (|) Rx(| 2-0, wt | -0 | drop i | Erames |
| 52 | RxQ-0, wt | -1 enque | eue frames | (|) Rx(| 0-0, wt | -1 (| drop i | Erames |
| 0 | RxQ-0, wt | -2 enque | eue frames | (|) Rx(| 2-0, wt | -2 (| drop i | Erames |

<output truncated>

| 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 team [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 | (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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

Switch# show controllers tcam

TCAM-0 Registers REW: 00B30103 SIZE: 00080040 ID: 0000000 CCR: 00000000_F0000020 RPID0: 00000000 00000000 RPID1: 00000000_00000000 RPID2: 00000000_00000000 RPID3: 00000000_00000000 HRRO: 00000000_E000CAFC HRR1: 00000000_00000000 HRR2: $00000000_{-}00000000$

<output truncated>

TCAM related PortASIC 1 registers

LookupType: 89A1C67D_24E35F00

LastCamIndex: 0000FFE0 LocalNoMatch: 000069E0

ForwardingRamBaseAddress:

00022A00 0002FE00 00040600 0002FE00 0000D400 00000000 003FBA00 00009000 00009000 00040600

00000000 00012800 00012900

| 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) Display begins with the line that matches the specified <i>expression</i> . |
| exclude | (Optional) Display excludes lines that match the specified 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

| Switch> show controllers utilization | | | |
|---|-------------------|------------------|-------------|
| Port | Receive Utiliz | zation Transmit | Utilization |
| Fa0/1 | 0 | 0 | |
| Fa0/2 | 0 | 0 | |
| Fa0/3 | 0 | 0 | |
| Fa0/4 | 0 | 0 | |
| Fa0/5 | 0 | 0 | |
| Fa0/6 | 0 | 0 | |
| Fa0/7 | 0 | 0 | |
| | | | |
| <output< td=""><td>truncated></td><td></td><td></td></output<> | truncated> | | |
| Switch 1 | Receive Bandwidth | Percentage Util: | ization : 0 |

Switch Transmit Bandwidth Percentage Utilization: 0

Switch Fabric Percentage Utilization: 0

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

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

Table 2-9 show controllers utilization Field Descriptions

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

| 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]

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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the **show cpu traffic qos** command:

| Switch> show cpu tra | ffic qo |
|----------------------|---------|
| QOS - CPU Generated | Traffic |
| | |
| Cos | 2 |
| DSCP | 30 |
| Precedence | 3 |
| QoS Group | 4 |

| Command | Description |
|-----------------|---|
| cpu traffic qos | Configures the quality of service (QoS) marking parameters for CPU-generated traffic. |

show diagnostic

Use the **show diagnostic** user EXEC command to display the online diagnostic test results and the supported test suites.

```
show diagnostic content [ | {begin | exclude | include} expression]
show diagnostic post [ | {begin | exclude | include} expression]
show diagnostic result [test {name | test-id | test-id-range | all}] [detail] [ | {begin | exclude | include} expression]
show diagnostic schedule [ | {begin | exclude | include} expression]
show diagnostic status [ | {begin | exclude | include} expression]
show diagnostic switch [detail] [ | {begin | exclude | include} expression]
```

Syntax Description

| content | Display test information including the test ID, the test attributes, and the | |
|------------|---|--|
| | supported coverage test levels for specific tests and for switches. | |
| post | Display the power-on self-test (POST) results. | |
| result | Display the diagnostic test results. | |
| test | (Optional) Specify the test results to display: | |
| | • <i>name</i> —Enter the name of the diagnostic test to display results only for this test. | |
| | • <i>test-id</i> —Enter the test ID number to display results only for this test. The test ID can be from 1 to 6. | |
| | • <i>test-id-range</i> —Enter the range of test ID numbers to display results only for these tests. | |
| | • all—Enter this keyword to display results for all the tests. | |
| detail | (Optional) Display the detailed test results. | |
| schedule | Display the scheduled diagnostic tests. | |
| status | Display the running diagnostic tests. | |
| switch | Display diagnostic results for the switch. | |
| 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. | |

Defaults

This command has no default setting.

Command Modes

User EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

The show diagnostic post command output is the same as the show post command output.

The **show diagnostic result** [**detail**] command output is the same as the **show diagnostic switch** [**detail**] command output.

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 diagnostic test IDs and attributes.

```
Switch> show diagnostic content:

Diagnostics test suite attributes:

B/* - Basic ondemand test / NA

P/V/* - Per port test / Per device test / NA

D/N/* - Disruptive test / Non-disruptive test / NA

S/* - Only applicable to standby unit / NA

X/* - Not a health monitoring test / NA

F/* - Fixed monitoring interval test / NA

E/* - Always enabled monitoring test / NA

A/I - Monitoring is active / Monitoring is inactive

R/* - Switch will reload after test list completion / NA

P/* - will partition stack / NA
```

| | | | Tes | t Interval | Thre- |
|------|--|------------|------|-------------|-------|
| ID | Test Name | Attributes | day | hh:mm:ss.ms | shold |
| ==== | ======================================= | ========= | ===: | ======== | ===== |
| 1) | <pre>TestPortAsicStackPortLoopback></pre> | B*N****I** | not | configured | n/a |
| 2) | <pre>TestPortAsicLoopback></pre> | B*D*X**IR* | not | configured | n/a |
| 3) | TestPortAsicCam> | B*D*X**IR* | not | configured | n/a |
| 4) | <pre>TestPortAsicRingLoopback></pre> | B*D*X**IR* | not | configured | n/a |
| 5) | <pre>TestMicRingLoopback></pre> | B*D*X**IR* | not | configured | n/a |
| 6) | TestPortAsicMem> | B*D*X**IR* | not | configured | n/a |

This example shows how to display the diagnostic test results for a switch. You can also use the **show diagnostic switch** command to display these results.

```
Switch> show diagnostic result
SerialNo : ME3400E44

Overall diagnostic result: PASS

Test results: (. = Pass, F = Fail, U = Untested)

1) TestPortAsicStackPortLoopback ---> .
2) TestPortAsicLoopback ----> U
3) TestPortAsicCam ----> U
4) TestPortAsicRingLoopback ----> U
5) TestMicRingLoopback ----> U
6) TestPortAsicMem ----> U
```

This example shows how to display the running tests in a switch:

```
Switch> show diagnostic status
<BU> - Bootup Diagnostics, <HM> - Health Monitoring Diagnostics,
<OD> - OnDemand Diagnostics, <SCH> - Scheduled Diagnostics
____________________________________
Card Description
                               Current Running Test
                                                         Run by
                                                         N/A
2
                                TestPortAsicStackPortLoopback
                                                          <0D>
                                TestPortAsicLoopback
                                                          <0D>
                                TestPortAsicCam
                                                          <0D>
                                TestPortAsicRingLoopback
                                                          <0D>
                                TestMicRingLoopback
                                                          <0D>
                                TestPortAsicMem
                                                          <OD>
3
                                N/A
                                                          N/A
4
                                N/A
                                                          N/A
```

<output truncated>

This example shows how to display the online diagnostic test schedule for a switch:

```
Switch> show diagnostic schedule
Current Time = 14:39:49 PST Tue Jul 5 2005
Diagnostic for Switch 1:
Schedule #1:
To be run daily 12:00
Test ID(s) to be executed: 1.
```

This example shows how to display the detailed results for a switch. You can also use the **show** diagnostic result all detail command to display these results.

```
Switch> show diagnostic switch detail
Switch:
        SerialNo: ME3400E44
 Overall diagnostic result: PASS
 Test results: (. = Pass, F = Fail, U = Untested)
   1) TestPortAsicStackPortLoopback ---> .
         Error code -----> 0 (DIAG_SUCCESS)
        Total run count ----> 19
        Last test execution time ----> Mar 01 1993 00:21:46
        First test failure time ----> n/a
        Last test failure time ----> n/a
        Last test pass time -----> Mar 01 1993 00:21:46
        Total failure count -----> 0
        Consecutive failure count ---> 0
   2) TestPortAsicLoopback ----> U
         Error code -----> 0 (DIAG_SUCCESS)
        Total run count -----> 0
        Last test execution time ----> n/a
        First test failure time ----> n/a
        Last test failure time ----> n/a
        Last test pass time ----> n/a
         Total failure count ----> 0
         Consecutive failure count ---> 0
```

4) TestPortAsicRingLoopback ----> U

5) TestMicRingLoopback ----> U

6) TestPortAsicMem -----> U

| Command | Description |
|--------------------------|--|
| diagnostic monitor | Configures the health-monitoring diagnostic test. |
| diagnostic schedule test | Sets the scheduling of test-based online diagnostic testing. |
| diagnostic start test | Starts the online diagnostic test. |

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> . |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

These are examples of output from the **show dot1q-tunnel** commands:

Switch> show dot1q-tunnel
dot1q-tunnel mode LAN Port(s)
-----Gi0/1
Gi0/2
Gi0/3
Gi0/6
Po2

Switch> show dot1q-tunnel interface gigabitethernet0/1

dot1q-tunnel mode LAN Port(s)

Gi0/1

| Command | Description |
|------------------------------|--|
| show vlan dot1q tag native | Displays 802.1Q native VLAN tagging status. |
| switchport mode dot1q-tunnel | Configures an interface as an IEEE 802.1Q tunnel port. |

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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

This is an example of output from the **show dot1x** and the **show dot1x all** privileged EXEC commands:

```
Switch# show dot1x
Sysauthcontrol
                                  = Enabled
Dot1x Protocol Version
                                  = 1
Dot1x Oper Controlled Directions = Both
Dot1x Admin Controlled Directions = Both
Switch# show dot1x all
Dot1x Info for interface GigabitEthernet0/1
```

Supplicant MAC 00d0.b71b.35de = CONNECTING

BendSM State = IDLE = UNAUTHORIZED PortStatus = 2 MaxReq

HostMode = Single Port Control = Auto

AuthSM State

```
QuietPeriod
              = 60 Seconds
Re-authentication = Disabled
ReAuthPeriod = 3600 Seconds
ServerTimeout
              = 30 Seconds
             = 30 Seconds
SuppTimeout
TxPeriod
             = 30 Seconds
              = 0
Guest-Vlan
Dot1x Info for interface GigabitEthernet0/2
______
PortStatus
              = UNAUTHORIZED
              = 2
MaxReq
             = Multi
HostMode
            = Auto
= 60 Seconds
Port Control
QuietPeriod
Re-authentication = Disabled
ReAuthPeriod = 3600 Seconds
ServerTimeout
              = 30 Seconds
SuppTimeout
              = 30 Seconds
TxPeriod
              = 30 Seconds
Guest-Vlan
              = 0
```

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

Switch# show dot1x interface gigabitethernet0/1

```
Supplicant MAC 00d0.b71b.35de
  AuthSM State = AUTHENTICATED
  BendSM State
                 = IDLE
PortStatus = AUTHORIZED
MaxReq
              = 2
               = Single
HostMode
Port Control = Auto
QuietPeriod
               = 60 Seconds
Re-authentication = Disabled
ReAuthPeriod = 3600 Seconds
              = 30 Seconds
ServerTimeout
              = 30 Seconds
SuppTimeout
TxPeriod
              = 30 Seconds
               = 0
Guest-Vlan
```

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 2-10 show dot1x statistics Field Descriptions

| Field | Description |
|---------|---|
| TxReqId | Number of Extensible Authentication Protocol (EAP)-request/identity frames that have been sent. |
| TxReq | Number of EAP-request frames (other than request/identity frames) that have been sent. |
| TxTotal | Number of Extensible Authentication Protocol over LAN (EAPOL) frames of any type that have been sent. |

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

| 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. |

| Command | Description |
|--------------------|---|
| diagnostic monitor | Resets the configurable IEEE 802.1x parameters to their default values. |

show env

Use the **show env** user EXEC command to display alarm contact, fan, temperature, and power information for the switch.

show env {alarm-contact | all | fan | power | temperature} [| {begin | exclude | include}
expression]

Syntax Description

| alarm-contact | Display alarm contact status. | |
|---------------|--|--|
| all | Display fan, temperature, power supply, and alarm status. | |
| fan | Display the status of the power supply fans. There are two fans in each power supply. If either fan in a power supply fails, the status is reported as FAULTY. | |
| power | Display the switch power-supply status. | |
| temperature | Display the switch temperature status as OK or FAULTY and the temperature thresholds. | |
| 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show env alarm-contact command:

Switch# show env alarm-contact

```
ALARM CONTACT 1
   Status:
              asserted
  Description: main_lab_door
  Severity: critical
  Trigger:
               open
ALARM CONTACT 2
  Status:
             asserted
  Description: main_lab_cabinet-1_door
  Severity: major
  Trigger:
               open
ALARM CONTACT 3
  Status:
               asserted
  Description: main_lab_supply-room_door
  Severity:
               major
  Trigger:
               open
```

ALARM CONTACT 4

Status: not asserted

Description: main_lab_water-level_FLOOD

Severity: critical Trigger: closed

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

```
Switch# show env all

FAN PS 1 is OK

FAN PS 2 is OK

TEMPERATURE is OK

Temperature Value: 23 Degree Celsius

Temperature State: GREEN

Yellow Threshold: 66 Degree Celsius

Red Threshold: 74 Degree Celsius

POWER SUPPLY 1 is DC OK

POWER SUPPLY 2 is DC OK

ALARM CONTACT 1 is asserted

ALARM CONTACT 2 is asserted

ALARM CONTACT 3 is asserted

ALARM CONTACT 4 is not asserted
```

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

```
Switch> show env fan
FAN PS 1 is OK
FAN PS 2 is FAULTY
```

This is an example of output from the **show env power** command when both DC inputs are expected but one is missing:

```
Switch# show env power
POWER SUPPLY 1 is DC OK
POWER SUPPLY 2 is DC FAULTY
```

This is an example of output from the **show env power** command when one AC-power supply is present:

```
Switch# show env power

POWER SUPPLY 1 is AC OK

AC Input : OK

Output : OK

Fan : OK

POWER SUPPLY 2 is NOT PRESENT
```

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

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

| Command | Description |
|-------------------|---------------------------------|
| alarm-contact | Configures alarm contacts. |
| power-supply dual | Configures power supply alarms. |

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

| begin | (Optional) Display begins with the line that matches the expression. | |
|------------|--|--|
| exclude | (Optional) Display excludes lines that match the expression. | |
| include | l 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)EY | This command was introduced. |

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.
- port/vlan—Some ports are configured for physical port disable, and others are configured for virtual
 port disable. Enter the **show running config** privileged EXEC command to see the configuration for
 each port.

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 I **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

Examples

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

Switch> show errdisable detect

| ErrDisable Reason | ${\tt Detection}$ | Mode |
|-------------------|-------------------|------|
| | | |
| arp-inspection | Enabled | port |
| bpduguard | Enabled | port |
| channel-misconfig | Enabled | port |
| community-limit | Enabled | port |
| dhcp-rate-limit | Enabled | port |
| dtp-flap | Enabled | port |
| gbic-invalid | Enabled | port |
| invalid-policy | Enabled | port |
| 12ptguard | Enabled | port |
| link-flap | Enabled | port |
| link-monitor-fail | Enabled | port |
| loopback | Enabled | port |
| lsgroup | Enabled | port |
| | | |

oam-remote-failureEnabledportpagp-flapEnabledport/vlanpsecure-violationEnabledport/vlansecurity-violatioEnabledportsfp-config-mismatchEnabledportstorm-controlEnabledportudldEnabledportvmpsEnabledport



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

| Command | Description |
|-----------------------------|---|
| errdisable detect cause | Enables error-disable detection for a specific cause or all causes. |
| show errdisable flap-values | 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) 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 |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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



Although visible in the output display, the switch does not support DTP.

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

Examples

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

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

| 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 expression. | |
|------------|--|--|
| exclude | (Optional) Display excludes lines that match the <i>expression</i> . | |
| include | 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

Switch> show errdisable recovery

| ErrDisable Reason | Timer Status |
|-------------------|--------------|
| | |
| udld | Disabled |
| bpduguard | Disabled |
| security-violatio | Disabled |
| channel-misconfig | Disabled |
| vmps | Disabled |
| pagp-flap | Disabled |
| dtp-flap | Disabled |
| 12ptguard | Disabled |
| link-flap | Enabled |
| psecure-violation | Disabled |
| gbic-invalid | Disabled |
| dhcp-rate-limit | Disabled |
| unicast-flood | Disabled |
| storm-control | Disabled |
| arp-inspection | Disabled |
| loopback | Disabled |

Timer interval:300 seconds

Interfaces that will be enabled at the next timeout:

| Interface | Errdisable reason | Time left(sec) |
|-----------|-------------------|----------------|
| | | |
| GiO/2 | link-flan | 279 |



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

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

```
Switch> show etherchannel 1 detail
Group state = L2
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP
             Ports in the group:
Port: Gi0/1
Port state
          = Up Mstr In-Bndl
Channel group = 1 Mode = Active Gcchange = -
Port-channel = Po1 GC = - Pseudo port-channel = Po1
                       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:
                                   Admin
                         LACP port
                                               Oper
                                                      Port
                                                              Port
                        Priority
                                    Key
                                                      Number State
Port.
       Flags State
                                              Kev
Gi0/1 SA
               bndl
                        32768
                                                             0x3D
                                     0x0
                                              0x1
                                                      0x0
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
     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
```

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 0 Gi0/2 Active
                               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

| Command | Description |
|----------------------------------|---|
| channel-group | Assigns an Ethernet port to an EtherChannel group. |
| channel-protocol | Restricts the protocol used on a port to manage channeling. |
| hw-module module logging onboard | Accesses or creates the port channel. |

show ethernet loopback

Use the **show ethernet loopback** privileged EXEC command to display information about per port Ethernet loopbacks configured on the switch or on an interface.

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

Syntax Description

| interface-id | (Optional) Show loopback information for the specified interface. Only physical interfaces support Ethernet loopback. |
|--------------|---|
| 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(44)EY | This command was introduced. |

Usage Guidelines

If you do not specify an *interface-id*, all configured loopbacks appear. The switch supports a maximum of two Ethernet loopback configurations.

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 ethernet loopback** command:

Switch# show ethernet loopback

Loopback Session 0 : Interface Gi0/3
Status : configured
MAC Mode : swap
Time out : 60

| Command | Description |
|--|--|
| ethernet loopback (interface configuration) | Configures an Ethernet loopback operation on an interface. |
| ethernet loopback (privileged EXEC) | Starts or stops the loopback operation. |

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]

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 | (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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show ethernet service evc command:

| Switch# | show | ethernet | service | evc | |
|---------|------|----------|---------|-----|--|
| | | | | | |

| Identifier | Type Act | -UNI-cnt | Status |
|------------|----------|----------|-----------------|
| BLUE | P-P | 2 | Active |
| PINK | MP-MP | 2 | PartiallyActive |
| PURPLE | P-P | 2 | Active |
| BROWN | MP-MP | 2 | Active |
| GREEN | P-P | 3 | Active |
| YELLOW | MP-MP | 2 | PartiallyActive |
| BANANAS | P-P | 0 | InActive |
| TEST2 | P-P | 0 | NotDefined |
| ORANGE | P-P | 2 | Active |
| TEAL | P-P | 0 | InActive |

| 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]

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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show ethernet service instance command:

Switch# show ethernet service instance

| SWILCH# SH | ow ethernet service | Instance |
|------------|---------------------|------------------------|
| Identifier | Interface | CE-Vlans |
| 222 | FastEthernet0/1 | untagged,1-4094 |
| 10 | FastEthernet0/2 | |
| 222 | FastEthernet0/2 | 200 |
| 333 | FastEthernet0/2 | default |
| 10 | FastEthernet0/3 | 300 |
| 11 | FastEthernet0/3 | |
| 10 | FastEthernet0/4 | 300 |
| 10 | FastEthernet0/6 | untagged, 1-4094 |
| 10 | FastEthernet0/7 | untagged, 1-4094 |
| 10 | FastEthernet0/8 | untagged,1-4094 |
| 10 | FastEthernet0/9 | untagged |
| 20 | FastEthernet0/9 | |
| 222 | FastEthernet0/11 | 300-350,900-999 |
| 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 |

| Command | Description |
|------------------------------|--|
| service instance id 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]

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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

These are examples of outputs from the **show ethernet service interface** commands:

 ${\tt Switch\#\ show\ ethernet\ service\ interface\ gigabitethernet0/1}$

Interface Identifier
GigabitEthernet0/1 PE2-G101

Switch# show ethernet service interface detail

Interface: FastEthernet0/1

ID: CE-VLANS:

EVC Map Type: Bundling-Multiplexing

 ${\tt Interface: FastEthernet0/2}$

ID: CE-VLANS:

EVC Map Type: Bundling-Multiplexing

Interface: FastEthernet0/3

ID:

CE-VLANS:

EVC Map Type: Bundling-Multiplexing

<output truncated>

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

| Command | Description | | |
|------------------------------|--|--|--|
| service instance id 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 expression. | | |
| exclude | (Optional) Display excludes lines that match the <i>expression</i> . | | |
| l 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)EY | This command was introduced. |

Usage Guidelines

Use this command to display the flow control status and statistics on the switch or for a specific interface.

Use the **show flowcontrol** command to display information about all the switch interfaces. The output from the **show flowcontrol** command is the same as the output from the **show flowcontrol module** *number* command.

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

Expressions are case sensitive. For example, if you enter 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 flowcontrol** command.

| Switch> | show | flowcontrol |
|---------|------|-------------|
| | | |

| DWICCII/ BI | LOW LIOWCO | IICIOI | | | | |
|---|------------|----------|---------|-------------|---------|---------|
| Port | Send Flo | wControl | Receive | FlowControl | RxPause | TxPause |
| | admin | oper | admin | oper | | |
| | | | | | | |
| Gi0/1 | Unsupp. | Unsupp. | off | off | 0 | 0 |
| Gi0/2 | desired | off | off | off | 0 | 0 |
| Gi0/3 | desired | off | off | off | 0 | 0 |
| <output th="" tr<=""><th>uncated></th><th></th><th></th><th></th><th></th><th></th></output> | uncated> | | | | | |

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

| Switch> s | 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 |

| 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

| interface interface-id | Display the IDPROM information for the specified Gigabit Ethernet 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 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(44)EY | This command was introduced. |

Usage Guidelines

This command applies only to Gigabit Ethernet interfaces and displays information about SFPs inserted in the SFP module slot.

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

Examples

This is an example of output from the **show idprom interface** command for a Gigabit Ethernet interface:

Switch# show idprom interface gigabitethernet0/1

: 1

General SFP Information Identifier : 0x03 : 0x07 Connector Transceiver Encoding : 0x02 : BR_Nominal 0x01Vendor Name : CISCO-NEC

Vendor Part Number : OD-BP1511-23SL2

Vendor Revision : 0x30 0x30 0x30 0x31 Vendor Serial Number : NEC08440067 Other Information : 0 Port asic num Port asic port num : 0

XCVR init completed

```
Embedded PHY

SFP presence index : 0

: cont : 697918
                      : not present
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
Resolved Media
                     : 1
Config Media
                      : 1
Access Count
                      : 0
Access Count : 0
Access Count Max : 2
Port Rx Loss
                     : no
Port Tx Fault
                      : no
Port Tx Disable
Sfp selection asic reg map
_____
stbi
                      : 0x00
                   : 0x4C
sfpControl
                    : 0xF000000
Regs Loc
```

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>

| 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]

Syntax 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 capabilities , switchport configuration, or transceiver 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. |



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

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

```
Switch# show interfaces gigabitethernet0/2
```

GigabitEthernet0/2 is down, line protocol is down

```
Hardware is Gigabit Ethernet, address is 0009.43a7.d085 (bia 0009.43a7.d085)
MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
   reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Auto-duplex, Auto-speed
input flow-control is off, output flow-control is off
ARP type: ARPA, ARP Timeout 04:00:00 Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  2 packets input, 1040 bytes, 0 no buffer
   Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
   0 watchdog, 0 multicast, 0 pause input
   0 input packets with dribble condition detected
```

```
4 packets output, 1040 bytes, 0 underruns
0 output errors, 0 collisions, 3 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier, 0 PAUSE output
0 output buffer failures, 0 output buffers swapped out
```

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

Switch# show interfaces accounting Vlan1

```
Protocol Protocol
                          Pkts In Chars In Pkts Out Chars Out
                        1094395 131900022 559555 84077157
                   ΤP
                         283896 17033760
          Spanning Tree
                                                 42
                                                           2520
                   ARP
                            63738
                                    3825680
                                                  231
                                                           13860
Interface Vlan2 is disabled
Vlan7
              Protocol Pkts In Chars In Pkts Out Chars Out
No traffic sent or received on this interface.
Vlan31
              Protocol
                         Pkts In Chars In Pkts Out Chars Out
No traffic sent or received on this interface.
GigabitEthernet0/1
               Protocol
                       Pkts In Chars In Pkts Out Chars Out
No traffic sent or received on this interface.
GigabitEthernet0/2
              Protocol Pkts In Chars In Pkts Out Chars Out
No traffic sent or received on this interface.
<output truncated>
```

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

Switch# show interfaces gigabitethernet0/2 capabilities

```
GigabitEthernet0/2
 Model:
                        modell-ic
 Type:
                        10/100/1000BaseTX SFP
 Speed:
                       10,100,1000,auto
                       half,full,auto
 Duplex:
 Trunk encap. type: 802.1Q
 Trunk mode:
                      on, off, desirable, nonegotiate
 Channel:
                       yes
 Broadcast suppression: percentage(0-100)
 Flowcontrol: rx-(off,on,desired),tx-(none)
 Fast Start:
                      yes
  QoS scheduling:
                       rx-(not configurable on per port basis),tx-(4q2t)
 CoS rewrite:
                       yes
 ToS rewrite:
                        yes
 UDLD:
                       yes
SPAN:
                      source/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 description

| Interface | Status | Protocol | . Description | า | |
|-----------|--------|----------|---------------|----|-----------|
| Gi0/2 | up | down | Connects | to | Marketing |

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

```
Switch# show interfaces etherchannel
Port-channel1:
Age of the Port-channel = 03d:20h:17m:29s
Logical slot/port = 10/1 Number of ports = 0 GC = 0x00000000 HotStandBy port = null
                 = Port-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
                   = Port-channel Ag-Not-Inuse
Port state
Port-channel3:
Age of the Port-channel = 03d:20h:17m:29s
Logical slot/port = 10/3 Number of ports = 0 GC = 0x00000000 HotStandBy port = null
                 = Port-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 mapping Interface Secondary VLAN Type vlan10 501 isolated vlan10 502 community

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

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

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

| Swi | tch# s l | how interfaces | status | | | | |
|-----|-----------------|----------------|------------|------|--------|-------|--------------|
| Por | t | Name | Status | Vlan | Duplex | Speed | Type |
| 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 |
| | | | | | | | |

| 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 | 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 \ | /lan Duplex | Speed | Туре |
| Gi0/2 | | connected 2 | 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.



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: dot1q
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: dot1q
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
```

Table 2-11 show interfaces switchport Field Descriptions

| Field | Description | | |
|--|--|--|--|
| Name | Displays the port name. | | |
| Switchport | Displays the administrative and operational status of the port. In this display, the port is in switchport mode. | | |
| Administrative Mode | Displays the administrative and operational modes. | | |
| Operational Mode | | | |
| Administrative Trunking Encapsulation | Displays the administrative and operational encapsulation method and whether trunking negotiation is enabled. | | |
| 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 | Displays whether or not unknown multicast and unknown | | |
| Unknown multicast blocked | unicast traffic is blocked on the interface. | | |

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 (VIANO030)
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 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
```

Switch#show interfaces switchport backup

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.

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.

${\tt Switch\#show\ interfaces\ switchport\ backup}$

Switch Backup Interface Pairs:

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:

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 Vlans allowed on trunk Port Gi0/1 1-4094 Port Vlans allowed and active in management domain Gi 0 / 1 Vlans in spanning tree forwarding state and not pruned Gi0/1

| 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 expression. |
| 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

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

| Switch# | show | interfaces | counters |
|---------|------|------------|----------|
| | | | |

| Port | InOctets | InUcastPkts | InMcastPkts | InBcastPkts | |
|---|----------|-------------|-------------|-------------|--|
| Fa0/1 | 0 | 0 | 0 | 0 | |
| Fa0/2 | 0 | 0 | 0 | 0 | |
| <pre><output truncated=""></output></pre> | | | | | |

<output truncated>

<output truncated>

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

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

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 |
| | | | |

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

In the output for the **show interface rep** [**detail**] command, in addition to an *Open*, *Fail*, or AP (alternate port) state, the Port Role might show as *Fail Logical Open* (*FailLogOpen*) or *Fail No Ext Neighbor* (*FailNoNbr*). These states indicate that the port is physically up, but REP is not configured on the neighboring port. In this case, one port goes into a forwarding state for the data path to help maintain connectivity during configuration. The Port Role for this port shows as Fail Logical Open; the port forwards all data traffic on all VLANs. The other failed Port Role shows as *Fail No Ext Neighbor*; this port blocks traffic for all VLANs.

When the external neighbors for the failed ports are configured, the failed ports go through the alternate port state transitions and eventually go to an Open state or remain as the alternate port, based on the alternate port election mechanism.

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 sample output from the **show interface rep** command:

Switch # show interface rep

| Interface | Seg-id | Туре | LinkOp | Role |
|---------------------|--------|--------------|-----------|------|
| GigabitEthernet 0/1 | 1 | Primary Edge | TWO_WAY | Open |
| GigabitEthernet 0/2 | 1 | Edge | TWO_WAY | Open |
| FastEthernet 0/4 | 2 | | INIT_DOWN | Fail |

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

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
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
```

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch# show interfaces gigabitethernet0/1 transceiver properties

Name : Gi0/1

Administrative Speed: auto Operational Speed: auto Administrative Duplex: auto Administrative Power Inline: enable

Operational Duplex: auto Administrative Auto-MDIX: off

Operational Auto-MDIX: off

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

```
Switch# show interfaces gigabitethernet0/3 transceiver detail ITU Channel not available (Wavelength not available), Transceiver is externally calibrated.

mA:milliamperes, dBm:decibels (milliwatts), N/A:not applicable.
++:high alarm, +:high warning, -:low warning, --:low alarm.

A2D readouts (if they differ), are reported in parentheses.
The threshold values are uncalibrated.
```

| Port | Temperature (Celsius) | Threshold | High Warn Threshold (Celsius) | Threshold | Threshold |
|-------|------------------------------------|-----------|-------------------------------------|-----------|-----------|
| Gi0/3 | 41.5 | 110.0 1 | 103.0 - | 8.0 - | 12.0 |
| Port | Voltage (Volts) | | High Warn Threshold (Volts) | Threshold | Threshold |
| Gi0/3 | 3.20 | 4.00 | 3.70 3 | .00 2 | .95 |
| Port | Current (milliamperes) | Threshold | | Threshold | Threshold |
| Gi0/3 | 31.0 | 84.0 | 70.0 4 | .0 2 | .0 |
| Port | Optical Transmit Power (dBm) | Threshold | Threshold | Threshold | Threshold |
| Gi0/3 | -0.0 (-0.0) | -0.0 - | -0.0 - | 0.0 - | 0.0 |
| Port | Optical Receive Power (dBm) | Threshold | Threshold | Threshold | Threshold |
| Gi0/3 | N/A (-0.0) | -0.0 - | -0.0 - | 0.0 - | 0.0 |

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

${\tt Switch\#\ show\ interfaces\ transceiver\ dom-supported-list}$

| 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 |
| X2_LR | ALL |
| <pre><output truncated=""></output></pre> | |
| | |

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 |
| | | | | | |

| 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 (SFF 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 <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)EY | This command was introduced. |

Usage Guidelines

The command is case sensitive. With no arguments, the **show inventory** command produces a compact display of all identifiable entities that have a product identifier. The display shows the entity location (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 are not programmed with PIDs and VID.s



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

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

Examples

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

```
Switch> show inventory
NAME: "1", DESCR: "model-id"
PID: model-id , VID:Vo1 , SN: FSJC0407839

NAME: "GigabitEthernet0/1", DESCR: "100BaseBX-10U SFP"
PID: , VID: , SN: NEC08440067
NAME: "GigabitEthernet0/2", DESCR: "10/100/1000BaseTX SFP"
PID: , VID: , SN: 00000MTC0839048G
```

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]

| • | | | |
|-----|-------|--------|-------|
| .51 | /ntax | Descri | ntion |
| _ | , | | P |

| 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 failure, IP validation failure, access control list (ACL) permitted and denied, and DHCP permitted and denied packets for the specified VLAN. If no VLANs are specified or if a range is specified, display information only for VLANs with dynamic ARP inspection enabled (active). |
| | You can specify a single VLAN identified by VLAN ID number, a range of VLANs separated by a hyphen, or a series of VLANs separated by a comma. The range is 1 to 4094. |
| 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 expression. |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show ip arp inspection command

Switch# show ip arp inspection

Source Mac Validation : Disabled
Destination Mac Validation : Disabled
IP Address Validation : Enabled

| Vlan | Configuration | Operation | | Static ACL |
|------|-------------------|------------|----------------|-----------------------|
| 1 | Enabled | | deny-all | No |
| Vlan | ACL Logging | DHCP Logg | ing Probe | Logging |
| 1 | Acl-Match | A11 | Permit | |
| | Forwarded | | DHCP Drops | - |
| 1 | 0 | 0 | 0 | 0 |
| Vlan | | CL Permits | | Source MAC Failures |
| 1 | 0 | 0 | 0 | 0 |
| Vlan | Dest MAC Failures | IP Valid | ation Failures | Invalid Protocol Data |
| 1 | 0 | | 0 | 0 |

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

Switch# show ip arp inspection interfaces

| Interface | Trust State | Rate (pps) | Burst Interval |
|-----------|-------------|------------|----------------|
| | | | |
| Gi0/1 | Untrusted | 15 | 1 |
| Gi0/2 | Untrusted | 15 | 1 |
| Gi0/3 | Untrusted | 15 | 1 |

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

${\tt Switch\#\ show\ ip\ arp\ inspection\ interfaces\ gigabitethernet0/1}$

| 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.

| 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 1 | 1993 | | | | | |
| Gi0/1 | 5 | 0001.0000.d774 | 128.1.9.25 | 6 | DHCP Deny | 19:39:02 UTC |
| Mon Mar 1 1 | 1993 | | | | | |
| Gi0/1 | 5 | 0001.c940.1111 | 10.10.10.1 | 7 | DHCP Deny | 19:39:03 UTC |
| Mon Mar 1 1 | 1993 | | | | | |
| Gi0/1 | 5 | 0001.c940.1112 | 10.10.10.2 | 8 | DHCP Deny | 19:39:04 UTC |
| Mon Mar 1 1 | 1993 | | | | | |
| Gi0/1 | 5 | 0001.c940.1114 | 173.1.1.1 | 10 | DHCP Deny | 19:39:06 UTC |
| Mon Mar 1 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 inspect: | ion statisti | lcs | |
|---------|----------------------|--------------|-------------------|-----------|
| Vlan | Forwarded | Dropped | DHCP Drops | ACL Drops |
| | | | | |
| 5 | 3 | 4618 | 4605 | 4 |
| 2000 | 0 | 0 | 0 | 0 |
| Vlan | DHCP Permits ACL | Permits S | Source MAC Failur | res |
| 5 | 0 | 12 | | 0 |
| 2000 | 0 | 0 | | 0 |
| Vlan | Dest MAC Failures | IP Validati | ion 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.

| | | | stics vlan 5 | tion stat: | inspec | show ip arp | Switch# |
|--------------|----------|---------|----------------|------------|--------|--------------|---------|
| | L Drops | ACI | DHCP Drops | Dropped | | Forwarded | Vlan |
| | | | | | _ | | |
| | 4 | | 4605 | 4618 | 3 | 3 | 5 |
| | | | | | | | |
| | | ailures | Source MAC F | L Permits | s AC | DHCP Permits | Vlan |
| | | | | | | | |
| | | 0 | | 12 | 0 | (| 5 |
| | | | | | | | |
| rotocol Data | nvalid E | In | ation Failures | IP Vali | ilures | Dest MAC Fa | Vlan |
| | | | | | | | |
| 3 | | | 9 | | 0 | | 5 |

5

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

Acl-Match

| Vlan | Configuration | Operation | ACL Match | Static ACL |
|------|---------------|-------------|-----------|------------|
| | | | | |
| 5 | Enabled | Active | second | No |
| Vlan | ACL Logging | DHCP Loggir | ng | |
| | | | | |

A11

| 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]

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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show ip dhcp snooping command.

Switch> show ip dhcp snooping

Switch DHCP snooping is enabled

DHCP snooping is configured on following VLANs:

40-42

Insertion of option 82 is enabled Option 82 on untrusted port is allowed

Verification of hwaddr field is enabled

Interface Trusted Rate limit (pps)
----GigabitEthernet0/1 yes unlimited
GigabitEthernet0/2 yes unlimited

| Command | Description |
|-------------------------------|---|
| show ip dhcp snooping binding | Displays the DHCP snooping binding information. |

show ip dhcp snooping binding

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

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

Syntax Description

| ip-address | (Optional) Specify the binding entry IP address. |
|------------------------|---|
| mac-address | (Optional) Specify the binding entry MAC address. |
| interface interface-id | (Optional) Specify the binding input interface. |
| vlan vlan-id | (Optional) Specify the binding entry VLAN. |
| begin | Display begins with the line that matches the <i>expression</i> . |
| exclude | Display excludes lines that match the <i>expression</i> . |
| include | 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

| Switch> | show | ip | dhcp | snooping | binding |
|---------|------|----|------|----------|---------|
|---------|------|----|------|----------|---------|

| MacAddress | IpAddress | Lease(sec) | Type | VLAN | Interface | | |
|-----------------------------|------------|------------|---------------|------|--------------------|--|--|
| | | | | | | | |
| 01:02:03:04:05:06 | 10.1.2.150 | 9837 | dhcp-snooping | 20 | GigabitEthernet0/1 | | |
| 00:D0:B7:1B:35:DE | 10.1.2.151 | 237 | dhcp-snooping | 20 | GigabitEthernet0/2 | | |
| Total number of hindings: 2 | | | | | | | |

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

| Switch> show ip dhc | p snooping binding | g 10.1.2.150 | | | |
|---------------------|--------------------|--------------|---------------|------|--------------------|
| MacAddress | IpAddress | Lease(sec) | Type | VLAN | Interface |
| | | | | | |
| 01:02:03:04:05:06 | 10.1.2.150 | 9810 | dhcp-snooping | 20 | GigabitEthernet0/1 |
| Total number of bin | dinas: 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) | Type | VLAN | Interface |
| | | | | | |
| 01:02:03:04:05:06 | 10.1.2.150 | 9788 | dhcp-snooping | 20 | GigabitEthernet0/2 |
| Total number of bin | 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 bin | ndings: 1 | | | | |

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

| Switch> show ip dho | p snooping bindir | ng vlan 20 | | | |
|---------------------|-------------------|------------|---------------|------|--------------------|
| MacAddress | IpAddress | Lease(sec) | Type | 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 2-12 show ip dhcp snooping binding Command Output

| Field | Description | | |
|--------------------------|---|--|--|
| MacAddress | Client hardware MAC address | | |
| IpAddress | Client IP address assigned from the DHCP server | | |
| Lease(sec) | Remaining lease time for the IP address | | |
| 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 | | |
| | Note 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. | | |

| 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) Display detailed status and statistics information. | |
|------------|--|--|
| 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(44)EY | This command was introduced. | | |

Examples

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

```
Switch> show ip dhcp snooping database
Agent URL :
Write delay Timer: 300 seconds
Abort Timer : 300 seconds
Agent Running: No
Delay Timer Expiry: Not Running
Abort Timer Expiry: Not Running
Last Succeded Time : None
Last Failed Time : None
Last Failed Reason: No failure recorded.
Total Attempts :
                            Ω
                               Startup Failures :
Successful Transfers :
                           0
                               Failed Transfers :
Successful Reads :
                            0
                                Failed Reads
                                               :
                                                         0
Successful Writes
                            0
                                Failed Writes
                                                         0
Media Failures
```

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

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

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

Last Succeded Time : None Last Failed Time : 17:14:25 UTC Sat Jul 7 2001 Last Failed Reason : Unable to access URL. Total Attempts 21 Startup Failures: : 0 Failed Transfers : Successful Transfers : Successful Reads : 21 0 Failed Reads : 0 0 Successful Writes Failed Writes : 21 : Media Failures : First successful access: Read Last ignored bindings counters : Binding Collisions : 0 Expired leases Invalid interfaces : 0 Unsupported vlans : 0 Parse failures Last Ignored Time : None Total ignored bindings counters: Binding Collisions : 0 Expired leases : Invalid interfaces : 0 Unsupported vlans : Parse failures : 0

| 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. |

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 statistics information. |
|------------|--|
| 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(44)EY | This command was introduced. | | |

Usage Guidelines

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

In a switch stack, all statistics are generated on the stack master. If a new stack master is elected, the statistics counters reset.

Examples

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

| Switch> | show | iр | dhcp | snooping | statistics | |
|---------|------|------|------|----------|------------|--|
| Packets | Forv | varo | ded | | | |
| Packets | Drop | ppe | £ | | | |

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

Packets Dropped From untrusted ports

| = | 0 |
|---|---|
| | |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| = | 0 |
| | |

= 0 = 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 no ip dhcp snooping information option allow-untrusted 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 ip dhcp snooping verify mac-address 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. |

Table 2-13 DHCP Snooping Statistics

| DHCP Snooping Statistic | Description |
|---------------------------------------|---|
| Interface Down | Number of times the packet is a reply to the DHCP relay agent, but the SVI interface for the relay agent is down. This is an unlikely error that occurs if the SVI goes down 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 a 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 packet is the same as the input port, causing a possible loop. Indicates a possible network misconfiguration or misuse of trust settings on ports. |
| Packet denied by platform | Number of times the packet has been denied by a platform-specific registry. |

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

```
Switch# show ip igmp profile 40

IGMP Profile 40

permit

range 233.1.1.1 233.255.255.255

Switch# show ip igmp profile

IGMP Profile 3

range 230.9.9.0 230.9.9.0

IGMP Profile 4

permit

range 229.9.9.0 229.255.255.255
```

| Command | Description |
|-----------------|---|
| ip igmp profile | Configures the specified IGMP profile number. |

show ip igmp snooping

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

show ip igmp snooping [groups | mrouter | querier [vlan vlan-id] [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 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Although visible in the output display, output lines for source-only learning are not valid.

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

Examples

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

```
Switch# show ip igmp snooping vlan 1
Global IGMP Snooping configuration:

IGMP snooping :Enabled
IGMPv3 snooping (minimal) :Enabled
Report suppression :Enabled
TCN solicit query :Disabled
TCN flood query count :2
Last member query interval : 100
```

Vlan 1:
----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



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>
```

| 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. |

show ip igmp snooping groups

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

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

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

Syntax Description

| count | (Optional) Display the total number of entries for the specified command 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

Switch# show ip igmp snooping groups

| Vlan | Group | Type | Version | Port List |
|------|-----------|------|---------|--------------|
| | | | | |
| 104 | 224.1.4.2 | igmp | v2 | Gi0/1, Gi0/2 |
| 104 | 224.1.4.3 | igmp | v2 | Gi0/1, Gi0/2 |

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

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

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

Switch# show ip igmp snooping groups vlan 1 dynamic

| Vlan | Group | Type | Version | Port List |
|------|-----------|------|---------|---------------|
| | | | | |
| 104 | 224.1.4.2 | igmp | v2 | Gi0/1, Fa0/15 |
| 104 | 224.1.4.3 | igmp | v2 | Gi0/1, Fa0/15 |

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

Switch# show ip igmp snooping groups vlan 104 224.1.4.2

| Vlan | Group | Type | Version | Port List |
|------|-----------|----------|---------|---------------|
| 104 | 224.1.4.2 | igmp | v2 | Gi0/1, Fa0/15 |

| 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 igmp snooping mrouter

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

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

Syntax Description

| 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 expression. |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

Use this command to display multicast router ports on the switch or for a specific VLAN.

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

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

Expressions are case sensitive. For example, if you enter 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 ip igmp snooping mrouter** command. It shows how to display multicast router ports on the switch.

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

| Command | Description | | |
|-------------------------------|---|--|--|
| ip igmp snooping | Enables and configures IGMP snooping on the switch or 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 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 expression. |
| exclude | (Optional) Display excludes lines that match the expression. |
| linclude | (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)EY | This command was introduced. |

Usage Guidelines

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

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

The show ip igmp snooping querier detail user EXEC command is similar to the show ip igmp snooping querier command. However, the show ip igmp snooping querier detail command displays the IP address of the most recent device detected by the switch querier along with this additional information:

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

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

Examples

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

| Switch> | show | ip igmp | snooping | querier | | |
|---------|------|-----------|----------|---------|--------|--|
| Vlan | IP | Address | IGMP | Version | Port | |
| | | | | | | |
| 1 | 172 | 2.20.50.1 | L1 v3 | | Gi0/1 | |
| 2 | 172 | 2.20.40.2 | 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 | IGMP switch quer | ier status | |
| admin s | | : Enab | led |
| | rersion IP address | : 2 | 0 0 |
| | interval (sec) | : 0.0. | 0.0 |
| | sponse-time (sec) | : 60 | |
| | r-timeout (sec) | : 10 | |
| _ | ery count | : 2 | |
| _ | ery interval (sec | | |
| elected | d querier is 1.1. | 1.1 on | = |
| admin s | | : Enab | led |
| admin v | ersion | : 2 | |
| source | IP address | : 10.1 | .1.65 |
| query-i | interval (sec) | : 60 | |
| max-res | sponse-time (sec) | : 10 | |
| querier | r-timeout (sec) | : 120 | |
| _ | ery count | : 2 | |
| | ery interval (sec | | |
| - | ional state | | Querier |
| operati | | | |
| | ional version ery pending count | : 2 : 0 | |

| 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. |

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]

Syntax Description

| ip-address | (Optional) Display IP source bindings for a specific IP address. |
|------------------------|--|
| mac-address | (Optional) Display IP source bindings for a specific MAC address. |
| dhcp-snooping | (Optional) Display IP source bindings that were learned by DHCP snooping. |
| static | (Optional) Display static IP source bindings. |
| vlan vlan-id | (Optional) Display IP source bindings on a specific VLAN. |
| interface interface-id | (Optional) Display IP source bindings 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> . |
| linclude | (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)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

| Switch> show ip source binding | | | | | | | |
|--------------------------------|-----------|------------|---------------|------|--------------------|--|--|
| MacAddress | IpAddress | Lease(sec) | Туре | VLAN | Interface | | |
| | | | | | | | |
| 00:00:00:0A:00:0B | 11.0.0.1 | infinite | static | 10 | GigabitEthernet0/1 | | |
| 00:00:00:0A:00:0A | 11.0.0.2 | 10000 | dhcp-snooping | 10 | GigabitEthernet0/1 | | |

| Command | Description | | |
|--------------------------|---|--|--|
| ip dhcp snooping binding | Configures the DHCP snooping binding database. | | |
| ip source binding | Configures static IP source bindings on the switch. | | |

show ip verify source

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

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

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 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(44)EY | This command was introduced. |

Examples

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

| Switch> show ip verify source | | | | | | | | |
|-------------------------------|-------------|--------------|--------------------------|----------------|-------|--|--|--|
| Interface | Filter-type | Filter-mode | IP-address | Mac-address | Vlan | | | |
| | | | | | | | | |
| fa0/1 | ip | active | 10.0.0.1 | | 10 | | | |
| fa0/1 | ip | active | deny-all | | 11-20 | | | |
| fa0/2 | ip | inactive-tru | nactive-trust-port | | | | | |
| fa0/3 | ip | inactive-no- | nactive-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.

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]

Syntax Description

| mcast {appclass groups status} | Display the IPC multicast routing information. The keywords have these meanings: | |
|---------------------------------------|--|--|
| | • appclass—Display the IPC multicast application classes. | |
| | • groups—Display the IPC multicast groups. | |
| | • status—Display the IPC multicast routing status. | |
| nodes | Display participating nodes. | |
| ports [open] | Display local IPC ports. The keyword has this meaning: | |
| | • open—(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: | |
| | • all—Display all the session statistics. | |
| | • rx—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: | |
| | • cumlulative —(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 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 |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This example shows how to display the IPC routing status:

Switch> show ipc mcast status

| IPC Mcast Status | | | | | | | |
|---|------------------------|---|-------|--------------|----|----|---|
| | | | | | Tx | Rx | |
| | | | | | | | |
| Total | Frames | | | | 0 | 0 | |
| Total | control Frames | | | | 0 | 0 | |
| Total | Frames dropped | | | | 0 | 0 | |
| Total | control Frames dropped | | | | 0 | 0 | |
| | | | | | | | |
| Total | Reliable messages | | | | 0 | 0 | |
| Total Reliable messages acknowledged | | | | 0 | 0 | | |
| Total Out of Band Messages | | | | 0 | 0 | | |
| Total Out of Band messages acknowledged | | | | 0 | 0 | | |
| | | | | | | | |
| Total | No Mcast groups | | | | 0 | 0 | |
| | | | | | | | |
| Total | Retries | 0 | Total | Timeouts | | | 0 |
| Total | OOB Retries | 0 | Total | OOB Timeouts | | | 0 |
| Total | flushes | 0 | Total | No ports | | | 0 |
| Total Total | Retries OOB Retries | 0 | Total | OOB Timeouts | | 0 | 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 | Type | Name (ci | urrent/peak/total) |
|----------------|--------------|------------------------------|--------------------|
| There are 8 pc | orts defined | 1. | - |
| 10000.1 | unicast | IPC Master:Zone | |
| 10000.2 | unicast | IPC Master:Echo | |
| 10000.3 | unicast | IPC Master:Control | |
| 10000.4 | unicast | IPC Master:Init | |
| 10000.5 | unicast | FIB Master:DFS.process_leve | el.msgs |
| 10000.6 | unicast | FIB Master: DFS.interrupt.ms | ags . |
| 10000.7 | unicast | MDFS RP:Statistics | |
| port_inde | ex = 0 seat | _id = 0x10000 last sent = | = 0 last heard = 0 |
| 0/2/159 | | | |
| | | | |
| 10000.8 | unicast | Slot 1 :MDFS.control.RIL | |
| port_inde | ex = 0 seat | $z_id = 0x10000$ last sent = | = 0 last heard = 0 |
| 0/0/0 | | | |
| | | | |
| RPC packets:cu | ırrent/peak/ | total | |

0/1/4

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

```
Switch> show ipc queue
There are 0 IPC messages waiting for acknowledgement in the transmit queue.
There are 0 IPC messages waiting for a response.
There are 0 IPC messages waiting for additional fragments.
There are 0 IPC messages currently on the IPC inboundQ.
Messages currently in use
                                                     1000
Message cache size
                                             :
Maximum message cache usage
                                                     1000
                                     5000 [max]
0 times message cache crossed
Emergency messages currently in use
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
                                                         last heard = 0
    port_index = 0 type = Unreliable
                                     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
```

Service Usage

| Total | via Unrel | iable | Connection-Less Service | | 12783 | 171 |
|-------|-----------|-------|----------------------------|-----|-------|-----|
| Total | via Unrel | iable | Sequenced Connection-Less | Svc | 0 | 0 |
| Total | via Relia | ble C | onnection-Oriented Service | | 17 | 116 |

<output truncated>

| Command | Description |
|-----------|--|
| clear ipc | Clears the IPC multicast routing statistics. |

show |2protocol-tunnel

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

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

Syntax Description

| 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> . |
| linclude | (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)EY | 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 **l2protocol-tunnel** interface configuration command, you can configure some or all of these parameters:

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

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

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

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

Examples

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

Switch> show 12protocol-tunnel

COS for Encapsulated Packets: 5

Drop Threshold for Encapsulated Packets: 0

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

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) | 1 1 1 1 | 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 | o/ | / | down |
| | | / | / | |
| Gi0/1 | | / | / | down |
| pag | p | / | 1000/ | |
| Gi0/2 | | / | / | down |
| pag | p | / | 1000/ | |

| Command | Description |
|----------------------------------|--|
| clear l2protocol-tunnel counters | Clears counters for protocol tunneling ports. |
| 12protocol-tunnel | Enables Layer 2 protocol tunneling for CDP, STP, or VTP packets on an interface. |
| 12protocol-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]



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. |
|----------------------|--|
| 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 expression. |
| expression | Expression in the output to use as a reference point. |

Command Modes

User EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

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

Examples

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

Switch> show lacp counters

| | LACP | DUs | Mark | er | Marker R | esponse | LACPDUs |
|--------------|------|------|------|------|----------|---------|----------|
| Port | Sent | Recv | Sent | Recv | Sent | Recv | Pkts Err |
| | | | | | | | |
| Channel grou | p: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
                                                      Key
                                                                        State
                    State
                                                               Number
                              32768
Gi0/1
            SA
                    bndl
                                            0x3
                                                       0x3
                                                               0x4
                                                                        0x3D
Gi0/2
                    bndl
                              32768
                                            0x3
                                                       0x3
                                                               0x5
                                                                        0x3D
```

Table 2-15 describes the fields in the display.

Table 2-15 show lacp internal Field Descriptions

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

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

| 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 | | | | | | | | | |
| | Note In the above list, bit7 is the MSB and bit0 is the LSB. | | | | | | | | | |

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.

| 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]

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 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. |

Defaults

There is no default.

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

Use the **show link state group** command to display the link-state group information. Enter this command without keywords to display information about all link-state groups. Enter the group number to display information specific to the group.

Enter the **detail** keyword to display detailed information about the group. The output for the **show link state group detail** command displays only those link-state groups that have link-state tracking enabled or that have upstream or downstream interfaces (or both) configured. If there is no link-state group configuration for a group, it is not shown as enabled or disabled.

Expressions are case sensitive. For example, if you enter I **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 link state group 1** command:

Switch> show link state group 1
Link State Group: 1 Status: Enabled, Down

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
```

| 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_command_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 id | 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. | | | | | |
| 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(44)EY | This command was introduced. |

Usage Guidelines

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 County Street number : Santa Clara : 3550 Building : 19 : 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 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
Ports : Gi2/0/1

Identifier : 2 Street number : 24568 Street number suffix : West

Landmark : Golden Gate Bridge

Primary road name : 19th Ave City : San Francisco

Country : 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

Elin location information

Identifier : 1

Elin : 14085553881 Ports : Gi2/0/2 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

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

show logging onboard

Use the **show logging onboard** privileged EXEC command to display the on-board failure logging (OBFL) information.

show logging onboard [module [slot-number]] {{clilog | environment | message | temperature | uptime | voltage} [continuous | detail | summary] [start hh:mm:ss day month year] [end hh:mm:ss day month year]} [| {begin | exclude | include} expression]

Syntax Description

| (Optional) The module slot number is always 1 and is not relevant for the ME-3400E. | | | | | | |
|---|--|--|--|--|--|--|
| Display the OBFL CLI commands that were entered on the switch. | | | | | | |
| Display the unique device identifier (UDI) information for the switch and for all the connected devices: the product identification (PID), the version identification (VID), and the serial number. | | | | | | |
| Display the hardware-related system messages generated by the switch. | | | | | | |
| Display the temperature of the switch. | | | | | | |
| Display the time when the switch starts, the reason the switch restarts, and the length of time the switch has been running since it last restarted. | | | | | | |
| Display the system voltages of the switch. | | | | | | |
| (Optional) Display the data in the <i>continuous</i> file. For more information, see the "Usage Guidelines" section. | | | | | | |
| (Optional) Display the data in the <i>summary</i> file. For more information, see the "Usage Guidelines" section. | | | | | | |
| (Optional) Display the data from the specified time and date. For more information, see the "Usage Guidelines" section. | | | | | | |
| (Optional) Display the data up to the specified time and date. For more information, see the "Usage Guidelines" section. | | | | | | |
| (Optional) Display both the continuous and summary data. | | | | | | |
| (Optional) Display begins with the line that matches the expression. | | | | | | |
| (Optional) Display excludes lines that match the expression. | | | | | | |
| (Optional) Display includes lines that match the specified expression. | | | | | | |
| Expression in the output to use as a reference point. | | | | | | |
| | | | | | | |

Defaults

There is no default.

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

When OBFL is enabled, the switch records all the OBFL data in a continuous, circular file. When the continuous file is full, the switch combines the data into a summary file, which is also known as a historical file. The switch then continues to write new data to the continuous file.

Use the **start** and **end** keywords to display data collected only during a particular time period. When specifying the **start** and **end** times, follow these guidelines:

- *hh:mm:ss*—Enter the time as a 2-digit number for a 24-hour clock. Make sure to use the colons (:). For example, enter **13:32:45**.
- day—Enter the day of the month. The range is from 1 to 31.
- month—Enter the month in upper-case or lower-case letters. You can enter the full name of the month, such as **January** or **august**, or the first three letters of the month, such as **jan** or **Aug**.
- year—Enter the year as a 4-digit number, such as 2008. The range is from 1993 to 2035.

Expressions are case sensitive. For example, if you enter I **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 logging onboard clilog continuous** command:

```
Switch# show logging onboard clilog continuous
CLI LOGGING CONTINUOUS INFORMATION
MM/DD/YYYY HH:MM:SS COMMAND
05/12/2006 15:33:17 show logging onboard temperature detail
05/12/2006 15:33:21 show logging onboard voltage detail
05/12/2006 16:14:09 show logging onboard temperature summary
<output truncated>
05/16/2006 13:07:53 no hw-module module logging onboard message level
05/16/2006 13:16:13 show logging onboard uptime continuous
05/16/2006 13:39:18 show logging onboard uptime summary
05/16/2006 13:45:57 show logging onboard clilog summary
This is an example of output from the show logging onboard message command:
Switch# show logging onboard message
ERROR MESSAGE SUMMARY INFORMATION
_____
                    | Count | Persistence Flag
Facility-Sev-Name
```

MM/DD/YYYY HH:MM:SS
-----No historical data to display

This is an example of output from the **show logging onboard status** command:

```
Switch# show logging onboard status
Devices registered with infra
                 Slot no.: 0 Subslot no.: 0, Device obfl0:
Application name clilog :
                 Path : obfl0:
                CLI enable status : enabled
                Platform enable status: enabled
Application name environment :
                Path : obf10:
                 CLI enable status : enabled
                 Platform enable status: enabled
Application name errmsg:
                Path : obfl0:
                CLI enable status : enabled
                Platform enable status: enabled
Application name poe :
                Path : obfl0:
                CLI enable status : enabled
                Platform enable status: enabled
Application name temperature :
                 Path : obfl0:
                 CLI enable status : enabled
                Platform enable status: enabled
Application name uptime :
                 Path : obf10:
                 CLI enable status : enabled
                Platform enable status: enabled
Application name voltage :
                Path : obfl0:
                 CLI enable status : enabled
                 Platform enable status: enabled
```

This is an example of output from the show logging onboard temperature continuous command:

Switch# show logging onboard temperature continuous

| TEMPERATURE CONTINUOUS INFORMATION | | | | | | | | | | | | |
|------------------------------------|----|---|---|----|---|---|---|---|---|----|----|----|
| Sensor | | | | ID | | | | | | | | |
| Board temperature | | | | | 1 | | | | | | | |
| Time Stamp Sensor Temperature OC | | | | | | | | | | | | |
| MM/DD/YYYY HH:MM:SS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 05/12/2006 15:33:20 | 35 | | | | | | | | | | | |
| 05/12/2006 16:31:21 | 35 | | | | | | | | | | | |
| 05/12/2006 17:31:21 | 35 | | | | | | | | | | | |
| 05/12/2006 18:31:21 | 35 | | | | | | | | | | | |
| 05/12/2006 19:31:21 | 35 | | | | | | | | | | | |
| 05/12/2006 20:31:21 | 35 | | | | | | | | | | | |
| 05/12/2006 21:29:22 | 35 | | | | | | | | | | | |
| 05/12/2006 22:29:22 | 35 | | | | | | | | | | | |
| 05/12/2006 23:29:22 | 35 | | | | | | | | | | | |
| 05/13/2006 00:29:22 | 35 | | | | | | | | | | | |
| 05/13/2006 01:29:22 | 35 | | | | | | | | | | | |
| 05/13/2006 02:27:23 | 35 | | | | | | | | | | | |
| 05/13/2006 03:27:23 | 35 | | | | | | | | | | | |
| 05/13/2006 04:27:23 | 35 | | | | | | | | | | | |
| 05/13/2006 05:27:23 | 35 | | | | | | | | | | | |
| 05/13/2006 06:27:23 | 35 | | | | | | | | | | | |

This is an example of output from the **show logging onboard uptime summary** command:

Switch# show logging onboard uptime summary

UPTIME SUMMARY INFORMATION

First customer power on: 03/01/1993 00:03:50

Total uptime : 0 years 0 weeks 3 days 21 hours 55 minutes

Total downtime : 0 years 0 weeks 0 days 0 hours 0 minutes

Number of resets : 2

Number of slot changes : 1

Current reset reason : 0x0

Current reset timestamp : 03/01/1993 00:03:28

Current slot : 1

Current uptime : 0 years 0 weeks 0 days 0 hours 55 minutes

Reset | |

Reason | Count |

No historical data to display

This is an example of output from the **show logging onboard voltage summary** command:

Switch# show logging onboard voltage summary

Sampling frequency : 60 seconds
Maximum time of storage : 3600 minutes

| Sensor | I | D Maximum Voltage |
|--------|---|---------------------|
| 12.00V | 0 | 12.567 |
| 5.00V | 1 | 5.198 |
| 3.30V | 2 | 3.439 |
| 2.50V | 3 | 2.594 |
| 1.50V | 4 | 1.556 |
| 1.20V | 5 | 1.239 |
| 1.00V | 6 | 0.980 |
| 0.75V | 7 | 0.768 |
| | | |

Nominal Range Sensor ID

No historical data to display

| Command | Description |
|----------------------------------|--|
| clear logging onboard | Removes the OBFL data in the flash memory. |
| hw-module module logging onboard | Enables OBFL. |

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> . |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the **show mac-access group** user EXEC command. In this display, Fast Ethernet interface 0/2 has the MAC access list *macl_e1* applied to inbound traffic; no MAC ACLs are applied to other interfaces.

Interface FastEthernet0/1:
 Inbound access-list is macl_e1
 Outbound access-list is not set
Interface FastEthernet0/2:
 Inbound access-list is not set
 Outbound access-list is not set
Interface FastEthernet0/3:
 Inbound access-list is not set
 Outbound access-list is not set
 Outbound access-list is not set
Interface FastEthernet0/4:
 Inbound access-list is not set
Outbound access-list is not set

Switch> show mac access-group

Inbound access-list is not set
 Outbound access-list is not set
<output truncated>

Interface FastEthernetv0/5:

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

| Command | Description |
|------------------|---|
| mac access-group | Applies a MAC access group to an interface. |

show mac address-table

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

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

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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

| Switch> | show | mac | addr | ess-tab | 1e |
|---------|------|-------|-------|---------|----|
| | Mag | - Ada | Arpec | Table | |

| | Mac Address Ta | able | |
|-------|-------------------|-------------|---------|
| Vlan | Mac Address | Туре | Ports |
| | | | |
| All | 0000.0000.0001 | STATIC | CPU |
| A11 | 0000.0000.0002 | STATIC | CPU |
| A11 | 0000.0000.0003 | STATIC | CPU |
| A11 | 0000.0000.0009 | STATIC | CPU |
| A11 | 0000.0000.0012 | STATIC | CPU |
| A11 | 0180.c200.000b | STATIC | CPU |
| A11 | 0180.c200.000c | STATIC | CPU |
| A11 | 0180.c200.000d | STATIC | CPU |
| A11 | 0180.c200.000e | STATIC | CPU |
| A11 | 0180.c200.000f | STATIC | CPU |
| A11 | 0180.c200.0010 | STATIC | CPU |
| 1 | 0030.9441.6327 | DYNAMIC | Gi0/4 |
| Total | Mac Addresses for | this criter | ion: 12 |

| 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 48-bit MAC address; the valid format is H.H.H. |
|------------------------|---|
| interface interface-id | (Optional) Display information for a specific interface. Valid interfaces include physical ports and port channels. |
| vlan vlan-id | (Optional) Display entries for the specific VLAN only. The range is 1 to 4094. |
| 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch# show mac address-table address 0002.4b28.c482

Mac Address Table

Vlan Mac Address Type Ports
---- All 0002.4b28.c482 STATIC CPU
Total Mac Addresses for this criterion: 1

| Command | Description |
|-------------------------------------|---|
| 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 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) Display aging time 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

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

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

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

| Command | Description |
|--|---|
| mac address-table aging-time | Sets the length of time that a dynamic entry remains in the MAC address table after the entry is used or updated. |
| show mac address-table address | Displays MAC address table information for the specified MAC address. |
| 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 the number of addresses for a specific VLAN. The range is 1 to 4094. | |
|--------------|---|--|
| begin | (Optional) Display begins with the line that matches the expression. | |
| l exclude | (Optional) Display excludes lines that match the expression. | |
| linclude | (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)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

Switch# show mac address-table count

| 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 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 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 expression. | |
| 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

User EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

| Mac Address Table | | | | |
|-------------------|-------------------|---------|----------|---|
| | | | | |
| Vlan | Mac Address | Туре | Ports | |
| | | | | |
| 1 | 0030.b635.7862 | DYNAMIC | Gi0/2 | |
| 1 | 00b0.6496.2741 | DYNAMIC | Gi0/2 | |
| Total | Mac Addresses for | this cr | iterion: | 2 |

Switch> show mac address-table dynamic

| 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

| interface-id | Specify an interface type; valid interfaces 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 expression. | |
| linclude | (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)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch> show mac address-table interface gigabitethernet0/2

Mac Address Table

| 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 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]

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 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 |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

Use the **show mac address-table learning** command without any keywords to display configured VLANs and whether MAC address learning is enabled or disabled on them. The default is that MAC address learning is enabled on all VLANs. Use the command with a specific VLAN ID to display the learning status on an individual VLAN.

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

Examples

This is an example of output from the **show mac address-table learning** user EXEC command showing that MAC address learning is disabled on VLAN 200:

Switch> show mac address-table learning

| VLAN | Learning | Status |
|------|----------|--------|
| | | |
| 1 | yes | 5 |
| 100 | yes | 5 |
| 200 | no | |
| | | |

| Command | Description |
|---------------------------------|---|
| mac address-table learning vlan | Enables or disables MAC address learning on a VLAN. |

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]

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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show mac address-table move update command:

```
Switch> show mac address-table move update
Switch-ID: 010b.4630.1780
Dst mac-address : 0180.c200.0010
Vlans/Macs supported: 1023/8320
Default/Current settings: Rcv Off/On, Xmt Off/On
Max packets per min : Rcv 40, Xmt 60
Rcv packet count: 10
Rcv conforming packet count : 5
Rcv invalid packet count: 0
Rcv packet count this min : 0
Rcv threshold exceed count : 0
Rcv last sequence# this min : 0
Rcv last interface : Po2
Rcv last src-mac-address : 0003.fd6a.8701
Rcv last switch-ID : 0303.fd63.7600
Xmt packet count : 0
Xmt packet count this min : 0
Xmt threshold exceed count: 0
Xmt pak buf unavail cnt : 0
Xmt last interface : None
switch#
```

| Command | Description |
|--|---|
| clear mac address-table move update | Clears the MAC address-table move update counters. |
| mac address-table move update {receive transmit} | 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 expression. | |
| exclude | (Optional) Display excludes lines that match the expression. | |
| linclude | (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)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

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

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch> show mac address-table static

Mac Address Table Vlan Mac Address Туре Ports A11 0100.0ccc.ccc STATIC CPU 0180.c200.0000 STATIC A11 0100.0ccc.cccd STATIC A11 0180.c200.0001 STATIC CPU 0180.c200.0004 STATIC CPU A11 A11 0180.c200.0005 STATIC CPU 0001.0002.0004 STATIC Drop 0001.0002.0007 STATIC Drop 6 Total Mac Addresses for this criterion: 8

| 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 <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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch> show mac address-table vlan 1

Mac Address Table

| Vlan | Mac Address | Type | Ports | |
|-------|-------------------|---------|----------|---|
| | | | | |
| 1 | 0100.0ccc.cccc | STATIC | CPU | |
| 1 | 0180.c200.0000 | STATIC | CPU | |
| 1 | 0100.0ccc.cccd | STATIC | CPU | |
| 1 | 0180.c200.0001 | STATIC | CPU | |
| 1 | 0180.c200.0002 | STATIC | CPU | |
| 1 | 0180.c200.0003 | STATIC | CPU | |
| 1 | 0180.c200.0005 | STATIC | CPU | |
| 1 | 0180.c200.0006 | STATIC | CPU | |
| 1 | 0180.c200.0007 | STATIC | CPU | |
| Total | Mac Addresses for | this cr | iterion: | 9 |

| 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]

Syntax Description

| session | (Optional) Display information about specified SPAN sessions. | | |
|----------------|--|--|--|
| session_number | Specify the number of the SPAN or RSPAN session. The range is 1 to 66. | | |
| all | Display all SPAN sessions. | | |
| local | Display only local SPAN sessions. | | |
| range list | 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. | | |
| remote | Display only remote SPAN sessions. | | |
| detail | (Optional) Display detailed information about the specified sessions. | | |
| begin | Display begins with the line that matches the <i>expression</i> . | | |
| exclude | Display excludes lines that match the expression. | | |
| linclude | 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(44)EY | This command was introduced. | | |

Usage Guidelines

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

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

Examples

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

```
Switch# show monitor
Session 1
Type
          :Local Session
Source Ports:
   RX Only:
                 Fa0/24
   TX Only: None
Both: 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
             :
:Fa0/1
Source Ports
   Bot.h
Destination Ports :Fa0/4
   Encapsulation : Replicate
         Ingress:Enabled
   Ingress encapsulation: DOT1Q
```

| Command | Description |
|-----------------|---|
| monitor session | Starts or modifies a SPAN or RSPAN session. |

show myr

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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

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

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

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

| Command | Description |
|--------------------|--|
| show mvr interface | Displays the configured MVR interfaces, status of the specified interface, or all multicast groups to which the interface belongs when the interface and members 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 b | | |
| vlan vlan-id | (Optional) Display all MVR group members on this VLAN. The range is 1 to 4094. | |
| l begin | (Optional) Display begins with the line that matches the expression. | |
| l exclude | (Optional) Display excludes lines that match the expression. | |
| linclude | (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(44)EY | This command was introduced. | | |

Usage Guidelines

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

If you enter the **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 | | | |
|---------|----------|-----------|------|-------------|-----------------|
| Port | Type | 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 interf | ace fa0/10 | | | |
|---------|-----------------|------------|------|-------------|-----------------|
| Port | Type | 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 inte | ertace ta0/1 | | | |
|---------|---------------|--------------|------|----------|-----------------|
| Port | Type | 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 interface | gigabitethernet0/1 | 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 | |
| | | | |

| 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 myr members

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

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

Syntax Description

| ip-address | (Optional) The IP multicast address. If the address is entered, all receiver and source ports that are members of the multicast group appear. If no address is entered, all members of all Multicast VLAN Registration (MVR) groups are listed. If a group has no members, the group is listed as Inactive. |
|------------|---|
| begin | (Optional) Display begins with the line that matches the <i>expression</i> . |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

| Switch# show mvr members | | | | | | |
|--------------------------|--------|---------|------|------------|--|--|
| MVR Group | 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 | 3000 | Static | | |
| 239.1.1.2 | ACTIVE | Fa0/1 | 1 | Static | | |
| 239.1.1.2 | ACTIVE | Fa0/2 | 2 | Static | | |
| | | | | | | |

<output truncated>

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:

| Command | Description Enables and configures multicast VLAN registration on the switch. | | |
|-------------------------------|---|--|--|
| mvr (global configuration) | | | |
| 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 members 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]]



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. |
| l begin (Optional) Display begins with the line that matches the expression | |
| l exclude (Optional) Display excludes lines that match the <i>expression</i> . | |
| 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 |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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

Examples

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

| Switch> | show pagp | 1 count | ers | | |
|---------|-----------|---------|------|-------|---|
| | Info | rmation | F | Flush | |
| Port | Sent | Recv | Sent | Rec | V |
| | | | | | |
| Channel | group: 1 | | | | |
| Gi0/1 | 45 | 42 | 0 | 0 | |
| Gi0/2 | 45 | 41 | 0 | 0 | |
| | | | | | |

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

Switch> show pagp 1 internal

Flags: S - Device is sending Slow hello. C - Device is in Consistent state.

A - Device is in Auto mode.

 $\begin{array}{lll} \mbox{H - Hello timer is running.} & \mbox{Q - Quit timer is running.} \\ \mbox{S - Switching timer is running.} & \mbox{I - Interface timer is running.} \end{array}$ Timers: H - Hello timer is running.

Channel group 1

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

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

Switch> show pagp 1 neighbor

Flags: S - Device is sending Slow hello. C - Device is in Consistent state. A - Device is in Auto mode. P - Device learns on physical port.

Channel group 1 neighbors

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

| 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.

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

Syntax Description

| brief | (Optional) Display the name of each macro. |
|---|---|
| description [interface interface-id] | (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 <i>expression</i> . |
| expression | Expression in the output to use as a reference point. |

Command Modes

User EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is a partial output example from the **show parser macro** command:

```
Switch# show parser macro
Total number of macros = 2

Macro name : sample-macro1
Macro type : customizable
duplex full
speed auto
mdix auto

Macro name : test1
Macro type : customizable
no shutdown
flowcontrol receive on
speed 100
```

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 macro brief

customizable : sample-macro1

customizable : test1

| 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) 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

In use by policymap: pin

| Command | Description |
|---|--|
| police aggregate (policy-map class configuration) | Applies an aggregate policer to multiple classes in the same policy map. |
| policer aggregate (global configuration) | 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 [interface interface-id]] | rate} [| {begin | exclude | include} expression]

Syntax Description

| drop | (Optional) Display control-plane frame-drop count for all interfaces or the specified interface. |
|---------------------------|--|
| interface interface-id | Optional) Display the control-plane information for the specified physical interface. |
| rate | (Optional) Display the configured threshold rate for CPU policers. |
| 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(44)EY | This command was introduced. |

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 interfaces on the switch or for the specified interface.

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.

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:

```
Switch# show policer cpu uni-eni drop interface gigabitethernet 0/1
```

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
```

| 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. | |
| | • input —Display information about input policy maps on the switch or applied to the specified port. | |
| | output—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 expression. | |
| expression | Expression in the output to use as a reference point. | |

Command Modes

User EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch> show policy-map interface GigabitEthernet0/1

Service-policy input: L3

Class-map: dscp-44 (match-all)
0 packets

```
Match: ip dscp 44
     police cir 68000000 bc 1000000
         conform-action set-dscp-transmit af41
         conform-action set-cos-transmit 3
        conform-action set-qos-transmit 18
         exceed-action set-dscp-transmit cs5
      conform: 0 (packets) 0 (bytes)
      exceed: 0 (packets) 0 (bytes)
      conform: 0 bps, exceed: 0 bps
    Class-map: dscp-14 (match-any)
      0 packets
     Match: ip dscp af13 (14)
     police cir 3000000 bc 93750 pir 5000000 be 156250
         conform-action set-prec-transmit 2
        conform-action set-cos-transmit precedence
         conform-action set-qos-transmit 12
         exceed-action set-cos-transmit precedence table tm-prec-to-cos
         exceed-action set-prec-transmit precedence
         violate-action set-cos-transmit 0
        violate-action set-dscp-transmit af13
      conform: 0 (packets) 0 (bytes)
      exceed: 0 (packets) 0 (bytes)
      violate: 0 (packets) 0 (bytes)
      conform: 0 bps, exceed: 0 bps, violate: 0 bps
    Class-map: prec-5 (match-any)
      0 packets
     Match: ip precedence 5
     police cir 15000000 bc 468750 pir 16000000 be 500000
        conform-action transmit
         exceed-action set-dscp-transmit precedence
        violate-action set-cos-transmit dscp
      conform: 0 (packets) 0 (bytes)
      exceed: 0 (packets) 0 (bytes)
      violate: 0 (packets) 0 (bytes)
      conform: 0 bps, exceed: 0 bps, violate: 0 bps
    Class-map: dscp-2 (match-all)
      0 packets
     Match: ip dscp 2
     police cir 34000000 bc 1000000 pir 37000000 be 1000000
         conform-action transmit
         exceed-action drop
        violate-action set-dscp-transmit af41
      conform: 0 (packets) 0 (bytes)
      exceed: 0 (packets) 0 (bytes)
      violate: 0 (packets) 0 (bytes)
      conform: 0 bps, exceed: 0 bps, violate: 0 bps
Class-map: prec-0 (match-any)
      0 packets
     Match: ip precedence 0
     police aggregate AP-L3-42m-2
      conform: 0 (packets) 0 (bytes)
      exceed: 0 (packets) 0 (bytes)
      violate: 0 (packets) 0 (bytes)
      conform: 0 bps, exceed: 0 bps, violate: 0 bps
     NOTE: Policing statistics for a class configured with an aggregate policer are the
      same for all classes in the policy-map configured with the same aggregate policer
```

<output truncated>

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
violate-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
                555555 (bps)
   CIR 5%
  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)
 Queue 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
```

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.

Table 2-16 show policy-map interface Field Descriptions

| 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 Service Code Point (DSCP) value, access groups, and QoS groups. | | | |
| Fields associated w | ith policing | | | |
| police | Shown when the police command has been configured to enable traffic policing. Displays the specified committed information rate (CIR) and conform burst size (BC) used for policing packets. | | | |

Table 2-16 show policy-map interface Field Descriptions (continued)

| Field | Description | | | |
|---|--|--|--|--|
| 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 specified rate. | | | |
| exceed | Displays the number of packets marked as exceeding the specified rate. | | | |
| violate-action | Displays the actions to be taken on packets marked as exceeding the maximum rate. | | | |
| violate | Displays the number of packets marked as exceeding the maximum 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 |
|------------|--|
| 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]

Syntax Description

| 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 trunk . | | |
| begin | (Optional) Display begins with the line that matches the expression. | | |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

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

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

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

Examples

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

Switch# show port-security

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

Switch# show port-security interface gigabitethernet0/1

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

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

Switch# show port-security address

```
Secure Mac Address Table

Vlan Mac Address Type Ports Remaining Age (mins)

1 0006.0700.0800 SecureConfigured Gi0/2 1

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

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

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

Switch# show port-security interface gigabitethernet0/2 address

| | Secure Mac Add | ress 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
10 default 54
11 default 101
12 default 101
13 default 201
14 default 501
```

| Command | Description |
|---|--|
| Deletes from the MAC address table a specific type of se 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 expression. | |
| l 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(44)EY | This command was introduced. | |

Usage Guidelines

If you enter the command without keywords, the output includes the interface type information for all ports on the switch. If you specify the port type (eni, nni, or uni), the output includes information for the specified port type.

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 port-type** command with no keywords:

| Switch# show port-type Port Name | Vlan | Port Type |
|----------------------------------|------|------------------------------|
| Fa0/1 | 1 | User Network Interface (uni) |
| Fa0/2 | 1 | User Network Interface (uni) |
| Fa0/3 | 1 | User Network Interface (uni) |
| Fa0/4 | 1 | User Network Interface (uni) |
| Fa0/5 | 1 | User Network Interface (uni) |
| Fa0/6 | 1 | User Network Interface (uni) |
| Fa0/7 | 1 | User Network Interface (uni) |
| Fa0/8 | 1 | User Network Interface (uni) |
| Fa0/9 | 1 | User Network Interface (uni) |
| Fa0/10 | 1 | User Network Interface (uni) |
| Fa0/11 | 1 | User Network Interface (uni) |
| Fa0/12 | 1 | User Network Interface (uni) |
| Fa0/13 | 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 | Network Node Interface (nni) |
| Gi0/2 | 1 | Network Node Interface (nni) |

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

| Switch# | show port-type nni | exclude Gi | gabitethernet0/1 |
|---------|--------------------|------------|------------------------------|
| Port | Name | Vlan | Port Type |
| | | | |
| Gi0/2 | | 1 | Network Node Interface (nni) |

| 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 | chive (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 expression. | |
| include | clude (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(44)EY | This command was introduced. | |

Usage Guidelines

Expressions are case sensitive. For example, if you enter I **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 | # | show | rep | topology | segment | 1 |
|--------|----|------|-----|----------|---------|---|
| DED CO | ·m | n+ 1 | | | | |

| MEE Segment I | | | |
|------------------|----------|------|------|
| 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# show rep 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

| 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. |
|------------|---|
| 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

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

Examples

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

Switch# show sdm prefer

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: | 8K |
|---|-----|
| number of IPv4 IGMP groups: | 1K |
| 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:
                                                     5K
 number of IPv4 IGMP groups + multicast routes:
                                                    1ĸ
 number of IPv4 unicast routes:
                                                    9 K
   number of directly-connected IPv4 hosts:
                                                    5K
   number of indirect IPv4 routes:
                                                    4 K
  number of IPv4 policy based routing aces:
                                                    512
  number of IPv4/MAC gos aces:
                                                     512
  number of IPv4/MAC security aces:
                                                     1K
```

| 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 (active 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 **portfast** and **state** 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.

Note

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 [detail | interface interface-id [detail]] (Optional) Display the multiple spanning-tree (MST) region configuration and status (available only in privileged EXEC mode).

The keywords have these meanings:

 digest—(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 *txholdcount* field was added.

The new master role appears for boundary ports.

The word *pre-standard* or *Pre-STD* appears when an IEEE standard bridge sends prestandard BPDUs on a port.

The word *pre-standard* (*config*) or *Pre-STD-Cf* appears when a port has been configured to send prestandard BPDUs and no prestandard BPDU has been received on that port.

The word *pre-standard* (*rcvd*) or *Pre-STD-Rx* appears when a prestandard BPDU has been received on a port that has not been configured to send prestandard BPDUs.

A *dispute* flag appears when a designated port receives inferior designated information until the port returns to the forwarding state or ceases to be designated.

- *instance-id*—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.
- interface interface-id—(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.
- detail—(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 (Optional) Display spanning-tree information for the specified (some keywords available only in privileged EXEC mode). Yo specify a single VLAN identified by VLAN ID number, a rang VLANs separated by a hyphen, or a series of VLANs separate comma. The range is 1 to 4094. | |
| [system-id] protocol] | |
| 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(44)EY | This command was introduced. |

Usage Guidelines

STP is not supported on UNIs. Valid spanning-tree information is available only for NNIs or ENIs.

If the *vlan-id* variable is omitted, the command applies to the spanning-tree instance for all VLANs.

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

Examples

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

Switch# show spanning-tree active

VLAN0001

```
Spanning tree enabled protocol ieee
 Root ID
          Priority 32768
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
 Bridge ID Priority 49153 (priority 49152 sys-id-ext 1)
          Address
                   0003.fd63.9580
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300
 Uplinkfast enabled
                            Prio.Nbr Type
Interface
            Role Sts Cost
      Root FWD 3019 128.24 P2p
<output truncated>
```

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

```
Switch# show spanning-tree detail
VLAN0001 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 49152, sysid 1, address 0003.fd63.9580
 Configured hello time 2, max age 20, forward delay 15
 Current root has priority 32768, address 0001.42e2.cdd0
 Root port is 24 (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 interface-id command:

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
Portfast is disabled by default
PortFast BPDU Guard is disabled by default
Portfast BPDU Filter is disabled by default
Loopguard is disabled by default
Pathcost method used is short
```

| Name | Blocking | Listening | Learning | Forwarding | STP Active |
|--|------------------|------------------|------------------|-------------------|-------------------|
| VLAN0001 VLAN0002 VLAN0004 VLAN0006 | 1 3 3 3 | 0 0 0 0 | 0 0 0 0 | 11 1 1 1 | 12 4 4 4 |
| VLAN0031 | 3 | 0 | 0 | 1 | 4 |
| VLAN0032 <output truncated=""></output> | 3 | 0 | 0 | 1 | 4 |
| 37 vlans Station update rate se | 109 t to 150 | 0 packets/sec | 0 | 47 | 156 |

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

This is an example of output from the show spanning-tree mst configuration digest command:

Switch# show spanning-tree mst configuration

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

Switch# show spanning-tree mst interface gigabitethernet0/1

```
GigabitEthernet0/1 of MST00 is root forwarding

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

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

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

Bpdus sent 5, received 74

Instance role state cost prio vlans mapped

0 root FWD 200000 128 1,12,14-4094
```

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

Switch# show spanning-tree mst 0 ###### MST00 vlans mapped: 1-9,21-4094 Bridge address 0002.4b29.7a00 priority 32768 (32768 sysid 0) Root address 0001.4297.e000 priority 32768 (32768 sysid 0) port Gi0/1 path cost 200038 IST master *this switch Operational hello time 2, forward delay 15, max age 20, max hops 20 Configured hello time 2, forward delay 15, max age 20, max hops 20

| Interface | role s | state | cost | prio | type |
|--------------------|--------|-------|--------|------|----------------|
| | | | | | |
| GigabitEthernet0/1 | root I | FWD | 200000 | 128 | P2P bound(STP) |
| GigabitEthernet0/2 | desg I | FWD | 200000 | 128 | P2P bound(STP) |
| Port-channel1 | desg I | FWD | 200000 | 128 | P2P bound(STP) |

| clear spanning-tree counters clear spanning-tree detected-protocols | Clears the spanning-tree counters. |
|---|---|
| clear spanning-tree detected-protocols | |
| crear 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. |
| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

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

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

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

Examples

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

| Switch> show Interface | <pre>storm-control Filter State</pre> | Upper | Lower | Current |
|---|---------------------------------------|--------|--------|---------|
| | | | | |
| Gi0/1 | Forwarding | 20 pps | 10 pps | 5 pps |
| Gi0/2 | Forwarding | 50.00% | 40.00% | 0.00% |
| <pre><output truncated=""></output></pre> | | | | |

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 | gigabitether | net 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 2-17 show 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. | |

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

If you have used the **system mtu** or **system mtu jumbo** global configuration command to change the MTU setting, the new setting does not take effect until you reset the switch.

The system MTU refers to ports operating at 10/100 Mbps; the system jumbo MTU refers to Gigabit ports; the routing MTU is the MTU for routed packets.

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 system mtu command:

Switch# **show system mtu**System MTU size is 1500 bytes
System Jumbo MTU size is 1500 bytes
Routing MTU size is 1500 bytes

| 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. |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

Switch> show table-map
tandoori_1>show table-map
Table Map abc
default copy

Table Map cos2dscp
from 2 to 16
default copy

Table Map cos2cos
from 2 to 5
from 3 to 6
default 7

Table Map cos2cos10
default copy

Table Map cos2cos10
default copy

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

| 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 | (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 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(44)EY | This command was introduced. |

Usage Guidelines

If you do not enter an interface-id, administrative and operational UDLD status for all interfaces appear.

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

Examples

This is an example of output from the **show udld** *interface-id* command. For this display, UDLD is enabled on both ends of the link, and UDLD detects that the link is bidirectional. Table 2-18 describes the fields in this display.

```
Switch> show udld gigabitethernet0/1
Interface qi0/1
Port enable administrative configuration setting: Follows device default
Port enable operational state: Enabled
Current bidirectional state: Bidirectional
Current operational state: Advertisement - Single Neighbor detected
Message interval: 60
Time out interval: 5
   Entry 1
    Expiration time: 146
    Device ID: 1
    Current neighbor state: Bidirectional
    Device name: Switch-A
    Port ID: Gi0/1
   Neighbor echo 1 device: Switch-B
   Neighbor echo 1 port: Gi0/2
   Message interval: 5
    CDP Device name: Switch-A
```

Table 2-18 show udld Field Descriptions

| Field | Description | | | |
|--|--|--|--|--|
| Interface | The interface on the local device configured for UDLD. | | | |
| Port enable administrative configuration setting | How UDLD is configured on the port. If UDLD is enabled or disabled, the port enable configuration setting is the same as the operational enable state. Otherwise, the enable operational setting depends on the global enable setting. | | | |
| Port enable operational state | Operational state that shows whether UDLD is actually running on this port. | | | |
| Current bidirectional state | The bidirectional state of the link. An unknown state appears if the link is down or if it is connected to an UDLD-incapable device. A bidirectional state appears if the link is a normal two-way connection to a UDLD-capable device. All other values mean miswiring. | | | |
| Current operational state | The current phase of the UDLD state machine. For a normal bidirectional link, the state machine is most often in the Advertisement phase. | | | |
| Message interval | How often advertisement messages are sent from the local device. Measured in seconds. | | | |
| Time out interval | The time period, in seconds, that UDLD waits for echoes from a neighbor device during the detection window. | | | |
| Entry 1 | Information from the first cache entry, which contains a copy of echo information received from the neighbor. | | | |
| Expiration time | The amount of time in seconds remaining before this cache entry is aged out. | | | |
| Device ID | The neighbor device identification. | | | |
| Current neighbor state | The neighbor's current state. If both the local and neighbor devices are running UDLD normally, the neighbor state and local state should be bidirectional. If the link is down or the neighbor is not UDLD-capable, no cache entries appear. | | | |
| Device name | The device name or the system serial number of the neighbor. The system serial number appears if the device name is not set or is set to the default (Switch). | | | |
| Port ID | The neighbor port ID enabled for UDLD. | | | |
| Neighbor echo 1 device | The device name of the neighbors' neighbor from which the echo originated. | | | |
| Neighbor echo 1 port | The port number ID of the neighbor from which the echo originated. | | | |
| Message interval | The rate, in seconds, at which the neighbor is sending advertisement messages. | | | |
| CDP device name | The CDP device name or the system serial number. The system serial number appears if the device name is not set or is set to the default (Switch). | | | |

| 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 udld 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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



Note

Though visible in the **show version** output, the *configuration register* information is not supported on the switch.

```
Switch> show version
```

Cisco IOS Software, MEAP Software (MEAP-IPSERVICES-M), Experimental Version 12.2 (20050712:084347) [teresang-meap-bug-fix 109] Copyright (c) 1986-2005 by Cisco Systems, Inc. Compiled Sun 17-Jul-05 13:19 by teresang

ROM: Bootstrap program is C3750 boot loader BOOTLDR: ME3400 Boot Loader (me3400-HBOOT-M), Version 12.2 [mbutts-meap2 103]

tandoori_1 uptime is 1 day, 2 hours, 49 minutes
System returned to ROM by power-on
System image file is "flash:image"

cisco ME-3440-24T-FA (PowerPC405) processor with 118784K/12280K bytes of memory.

Processor board ID FSJC0407862 Last reset from power-on Target IOS Version 12.2(25)SE 3 Virtual Ethernet interfaces 24 FastEthernet interfaces 2 Gigabit Ethernet interfaces The password-recovery mechanism is enabled.

512K bytes of flash-simulated 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

Top Assembly Revision Number : 05 Hardware Board Revision Number : 0x01

Switch 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 vlan 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 type (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 type (optional) to see only the VLAN ID and type of UNI-ENI VLAN. |
| begin | (Optional) Display begins with the line that matches the expression. |
| l exclude | (Optional) Display excludes lines that match the expression. |
| | (Ontional) Display includes lines that match the appointed compaging |
| include | (Optional) Display includes lines that match the specified expression. |



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

Command Modes

User EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

In the **show vlan mtu** command output, the MTU_Mismatch column shows whether all the ports in the VLAN have the same MTU. When *yes* appears in this column, it means that the VLAN has ports with different MTUs. 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.

Examples

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



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> show vlan Switch#show vlan | | |
|--|--|--|
| VLAN Name | Status Por | rts |
| 1 default | Fa(Fa(Fa(Fa(Fa(| 10/1, Fa0/2, Fa0/3, Fa0/4 10/5, Fa0/6, Fa0/7, Fa0/8 10/9, Fa0/10, Fa0/11, Fa0/12 10/13, Fa0/14, Fa0/15, Fa0/16 10/17, Fa0/18, Fa0/19, Fa0/20 10/21, Fa0/22, Fa0/23, Fa0/24 10/1, Gi0/2 |
| 1002 fddi-default 1003 token-ring-default 1004 fddinet-default 1005 trnet-default | act/unsup act/unsup act/unsup act/unsup | |

| VLAN Type | SAID | MTU | Parent | RingNo | BridgeNo | Stp | ${\tt BrdgMode}$ | 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 | L500 - | - | - | ibm - | 0 | 0VLAN | Name | |
| | | | | | | | | | |
| Remote SPA | N VLANs | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Primary Se | condary Typ | oe | | Ports | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| VLAN Type | | Port | S | | | | | | |
| | | | | | | | | | |

Table 2-19 show vlan Command Output Fields

| Field | Description |
|----------------------------------|---|
| VLAN | VLAN number. |
| Name | Name, if configured, of the VLAN. |
| Status | Status of the VLAN (active or suspend). |
| Ports | Ports that belong to the VLAN. |
| 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. |

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

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

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

| Switch | > show vlan | private-vlan | |
|--------|-------------|------------------|--|
| Primar | y 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 | 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:

```
Switch> show vlan uni-vlan type
Vlan Type
---- UNI isolated
UNI community
UNI isolated
```

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.

| Swite VLAN | | ow vlan id | 2 | | Stat | tus | Poi | cts | | | |
|---------------|-------|------------|------|--------|--------|--------|-----|------|----------|--------|--------|
| 2 | VLAN0 | 200 | | | act: | ive | Gi(| 0/1, | Gi0/2 | | |
| VLAN | Туре | SAID | MTU | Parent | RingNo | Bridge | eNo | Stp | BrdgMode | Trans1 | Trans2 |
| 2 | enet | 100002 | 1500 | - | - | - | | - | - | 0 | 0 |
| Remot | e SPA | N VLAN | | | | | | | | | |
| Disab | oled | | | | | | | | | | |

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

| 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

| тарпате | (Optional) Name of a specific VLAN access map. |
|------------|--|
| begin | (Optional) Display begins with the line that matches the expression. |
| l 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

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

| Command | Description |
|------------------|--|
| show vlan filter | Displays information about all VLAN filters or about a particular VLAN or VLAN access map. |
| vlan access-map | Creates a VLAN map entry for VLAN packet filtering. |
| vlan filter | Applies a VLAN map to one or more VLANs. |

show vlan filter

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

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

Syntax Description

| 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 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(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

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

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

| Command | Description |
|----------------------|--|
| show vlan access-map | Displays information about a particular VLAN access map or for all VLAN access maps. |
| vlan access-map | Creates a VLAN map entry for VLAN packet filtering. |
| vlan filter | Applies a VLAN map to one or more VLANs. |

show vlan mapping

Use the **show vlan mapping** privileged EXEC command to display information about VLAN mapping on trunk ports.

 $show\ vlan\ mapping\ [interface\ \it interface-id\ |\ usage]\ [\ |\ \{begin\ |\ exclude\ |\ include\}\ \it expression]$

Syntax Description

| interface interface-id | (Optional) Display VLAN mapping information for the specified interface. |
|------------------------|--|
| usage | (Optional) Display hardware resources used in VLAN mapping. |
| 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. |

Defaults

There is no default.

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(44)EY | This command was introduced. |

Usage Guidelines

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

Examples

This is an example of output from the show vlan mapping command:

| Switch# | show | vlan | mapping |
|---------|------|------|---------|
|---------|------|------|---------|

| Interface Fa0/5: | | |
|--|-----------------|----------------|
| VLANs on wire | Translated VLAN | Operation |
| | | |
| <pre>default QinQ Interface Fa0/2:</pre> | 1 | selective QinQ |
| VLANs on wire | Translated VLAN | Operation |
| | | |
| 2 | 104 | 1-to-1 mapping |
| | | |

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

Switch# show vlan mapping interface fa0/6

Interface fa0/6:

| VLAN on wire | Translated VLAN | Operation |
|--------------|-----------------|----------------|
| 1 | 11 | 1-to-1 mapping |
| 12,16-18 | 100 | selective QinQ |
| * | 101 | default OinO |

These are examples of output from the **show vlan mapping usage** command:

Switch# show vlan mapping usage

Ports:Gi0/1-Gi0/2,Fa0/1-Fa0/24
Vlan Mapping resource usage is 1%

Switch# show vlan mapping usage

Ports:Gi0/1-Gi0/4

Vlan Mapping resource usage is 0%

Ports:Gi0/5-Gi0/8

Vlan Mapping resource usage is 0%

Ports:Gi0/9-Gi0/12

Vlan Mapping resource usage is 0%

Ports:Gi0/13-Gi0/16

Vlan Mapping resource usage is 0%

| Command | Description |
|-------------------------|--|
| switchport vlan mapping | Configures VLAN mapping on an interface. |

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 <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(44)EY | This command was introduced. |

Usage Guidelines

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 vmps statistics** command.

Switch> show vmps statistics VMPS Client Statistics VQP Queries: 0 VQP Responses: 0 VMPS Changes: 0 VQP Shutdowns: 0 VQP Denied: 0 VQP Wrong Domain: 0 VQP Wrong Version: 0 VQP Insufficient Resource: 0

Table 2-20 describes each field in the display.

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. |

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

| 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. |

| 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. |